Series 1961, No. 15
Issued February 1965

SOIL SURVEY

Meriwether County Georgia

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATIONS

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY of Meriwether County, Ga., will serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; aid foresters in managing woodland; help prospective farmers, land appraisers, bankers, and real estate agents to decide the value of a particular farm; and serve as a reference for teachers and students. It will also add to our general knowledge of soils.

Locating the soils

Use the index to map sheets at the back of this report to locate areas on the large map. The index is a small map of the county on which numbered rectangles have been drawn to show where each sheet of the large map is located. When the correct sheet of the large map has been located, it will be seen that boundaries of the soils are outlined and that there is a symbol for each kind of soil. All areas marked with the same symbol are the same kind of soil, wherever they appear on the map. The symbol is inside the area if there is enough room; otherwise, it is outside the area and a pointer shows where the symbol belongs.

Finding information

Special sections of the report will interest different groups of readers, and some sections will be of interest to all. The introductory part, for example, gives facts about the general nature of the county that will be of interest mainly to those not familiar with the county. The "Guide to Mapping Units" at the back of the report will help the reader to use the map and the report.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of the Soils" and then turn to the section "Use and Management of the Soils." In this way, they first identify the soils on their farm and then learn how these soils can be managed and what yields can be expected. The "Guide to Mapping Units" at the back of the report will simplify use of the map and report. This guide lists each soil and land type mapped in the county, and the page where each is described. It also lists, for each soil and land type, the capability unit, woodland suitability group, and the wildlife group, and the pages where each of these is described.

Foresters and others interested in woodlands can refer to the section "Woodland." In that section the soils of the county are grouped according to their suitability for trees, and factors affecting the management of woodland are explained.

Sportsmen and others interested in wildlife and fish can refer to the section "Wildlife and Fish" for much information regarding wildlife and the management of soils for wildlife.

Engineers will want to refer to the section "Engineering Properties of Soils." Tables in that section show characteristics of the soils that affect engineering.

Persons interested in science will find information about how the soils were formed and how they are classified in the section "Formation, Morphology, and Classification of Soils."

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest.

Newcomers to Meriwether County will be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section, "General Nature of the County," which gives additional information about the county.

* * *

Fieldwork for this survey was completed in 1961. Unless otherwise indicated, all statements in the report refer to conditions in the county at that time. This soil survey of Meriwether County was made as part of the technical assistance furnished by the Soil Conservation Service to the Pine Mountain Soil Conservation District.

***Cover pictures.*—Loblolly pine, a peach orchard, and a fescue pasture.**

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Issued February 1965

SOIL SURVEY OF MERIWETHER COUNTY, GEORGIA

BY R. D. WELLS

FIELD SURVEY BY R. D. WELLS, J. F. BROOKS, AND T. N. CRABB,
SOIL CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

MERIWETHER COUNTY is in the west-central part of Georgia (fig. 1). The eastern boundary is the Flint River. Pine Mountain extends across the southern border.

Greenville, the county seat, is near the center of the county, and Manchester, the largest city, is in the southeastern corner. Other cities and towns are Woodbury, which is near the eastern border; Warm Springs, which is near the southern border; and Luthersville, which is near the northern border. The towns of Gay, Chalybeate Springs, Alvaton, Haralson, and Lone Oak are also in this county.

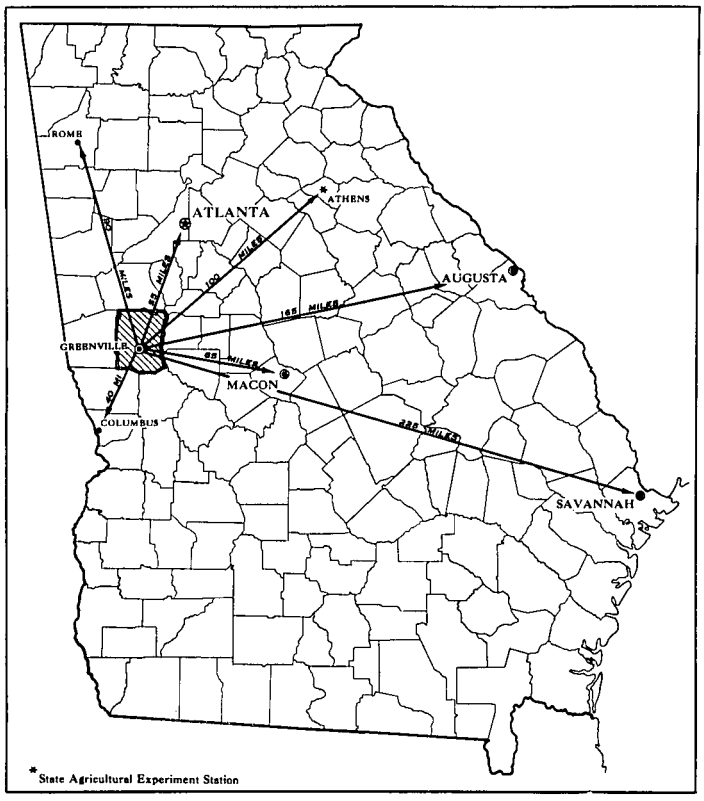

Figure 1.—Location of Meriwether County in Georgia.

The total area of Meriwether County is 499 square miles, or 319,360 acres. About 68 percent of the acreage is woodland. Corn, cotton, peaches, and pimento peppers are important cash crops, and vegetables are grown for sale on a number of farms. Much of the income from farming is derived from the sale of livestock and livestock products.

General Nature of the County

This section gives information about the geology, drainage, physiography, climate, water supplies, and vegetation. It also gives facts about the social and industrial development, including agriculture. The agricultural statistics used are mainly from reports of the Bureau of the Census.

Geology, Drainage, and Physiography

Meriwether County is entirely within the Piedmont Plateau. About 75 to 80 percent of the county is underlain by biotite gneiss and schist, or by other metamorphic rocks. The remaining 20 to 25 percent is underlain by granite gneiss and other igneous rocks.[1] The effect of these rocks on the soils of the county is discussed in the section "Formation, Morphology, and Classification of Soils."

The Flint River flows southward along the eastern border of the county and drains about 65 percent of the area. The remaining 35 percent drains westward to the Chattahoochee River. In most places the top of the ridge that separates these two drainage systems is 850 to 950 feet above sea level. The lowest point in the county is slightly less than 700 feet above sea level and is at that point where the Flint River flows out of the county. The highest elevations are on Pine Mountain, where several peaks are nearly 1,200 feet above sea level.

Practically all of the uplands are drained by the many branching creeks or intermittent streams. Most of the uplands are very gently sloping to rolling, but some of the areas along drainageways and most of those on the slopes of Pine Mountain are steep.

[1] GEORGIA DIVISION OF MINES, MINING, AND GEOLOGY. GEOLOGIC MAP OF GEORGIA. Prepared by Ga. Div. of Mines, Mining, and Geol. in coop. with the U.S. Dept. of Int., Geol. Survey. 1 p. 1939.

Climate [2]

Meriwether County has a mild climate. The summers are moderately warm, but because of the higher elevation in this part of the State, the temperature is lower than that in areas at the same latitude in the eastern part. The temperature reaches 90° F. or higher on an average of 2 out of 3 days during June, July, and August. A temperature of 100° or higher is reached in summer during only about 1 out of 3 years, and the average temperature is no higher than 80° in any one month. In summer the temperature usually drops to the low seventies or below at night. The average minimum temperature for the 3 months in summer is about 68°. In no month is the average minimum temperature as high as 70°.

Winters usually are not severe in this county, but there are frequent, and sometimes large, variations in temperature within short periods of time. These variations occur when the area comes alternately under the influence of cold winds from the north and northwest and the warm southerly winds from the Gulf of Mexico. The cold spells in winter, when the temperature often drops in early morning to freezing or below, are usually shorter than the alternating periods of comparatively mild weather. A temperature of 32° or lower may be expected on about one-third of the days from December through February, but a temperature as low as 20° occurs only about four times during an average winter. The county experienced its lowest recorded temperature in February 1899, when the mercury dropped to just below zero. The temperature during the day usually rises above freezing, even during the coldest weather. Most outside activities can be carried on throughout the winter with only minor interruptions because of cold weather.

The annual average rainfall is about 49 inches. Rainfall is fairly well distributed throughout the year. Infrequently, there is a significant amount of snow. Traces of snow may be expected somewhere in the county during most winters, but there is a measurable amount in only about 1 year out of 4.

Tornado-type storms have been reported in this county three times. There are frequent thunderstorms in spring and summer, and a major part of the rainfall during the warm season is associated with these storms. As a result, rainfall in summer is highly variable throughout the county. Some of the more intense thunderstorms are accompanied by winds that cause local damage. Sometimes these storms are accompanied by hail.

Records of wind and humidity have not been kept in this county. Based on records from surrounding areas, however, wind speeds can be expected to range from an average of about 7 miles an hour late in summer to more than 10 miles an hour in spring. The prevailing winds are from a northerly direction in winter and from a southerly direction in summer. The average relative humidity for early morning is usually in the low to middle eighties throughout the year. The higher averages usually occur late in summer and in autumn. The average relative humidity for early afternoon ranges from the forties in spring to the fifties in fall and winter. Table 1 shows temperature and precipitation data, by months and for the year.

[2] This section was prepared by HORACE S. CARTER, State climatologist, U.S. Weather Bureau, Athens, Ga.

TABLE 1.—*Temperature and precipitation data*

[Data for temperature are based on records kept at weather stations in adjacent counties and on short-term records kept at Greenville, as temperature data are not available for the weather station at Woodbury. Data for precipitation are from records kept at the weather station at Woodbury for the period from 1931 to 1960, inclusive]

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	2 years in 10 will have at least 4 days with—		Average monthly total	1 year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*
January	57. 9	36. 8	73	22	4. 19	2. 0	7. 9
February	60. 4	37. 9	75	24	4. 60	1. 7	7. 7
March	66. 5	42. 7	81	28	5. 80	3. 0	10. 6
April	75. 6	50. 6	87	38	4. 66	2. 0	7. 7
May	83. 0	58. 8	93	48	3. 42	1. 0	5. 9
June	89. 1	66. 5	97	59	3. 88	2. 4	5. 8
July	89. 9	68. 9	97	65	5. 41	3. 2	8. 0
August	89. 7	68. 3	97	63	4. 03	2. 1	5. 9
September	85. 1	63. 0	95	54	3. 62	. 9	7. 3
October	76. 8	52. 6	88	40	2. 17	. 3	5. 5
November	65. 9	41. 4	79	28	2. 73	. 8	7. 9
December	58. 1	36. 4	72	23	4. 54	1. 0	9. 0
Year [1]	74. 8	52. 0	99	18	49. 05	41. 1	61. 8

[1] Data on this line are the same for the year as other entries are for the respective months. For example, 99° in the fourth column means that 2 years in 10 will have at least 4 days with a maximum temperature of 99° or higher. Also 41.1 in the seventh column means that 1 year in 10 will have total precipitation of less than 41.1 inches.

Water Supplies

The Flint River and the many other permanent streams of the county are excellent sources of water for cities, industries, and irrigation. Most farms, however, get water for domestic use from dug wells that are 60 feet or less deep or from bored or drilled wells that are 100 to 250 feet deep. The shallower wells commonly yield 1 to 4 gallons per minute, and the deeper ones, 2 to 8 gallons per minute.[3] The yield of water from these wells is generally lowest late in fall and during the early part of winter. Although some drilled wells that supply cities and industries in this general area yield as much as 400 gallons per minute, none of the rock strata of the county can be counted on to yield as much as one-half gallon per minute to every well. Generally, there are no water-bearing fractures of any importance at a depth below 250 feet.

[3] CARTER, R. W., AND HERRICK, S. M. WATER RESOURCES OF THE ATLANTA METROPOLITAN AREA. Geol. Survey, Cir. 148, 19 pp., illus. 1951.

The water table is generally highest in April and May and lowest in October and November. Contrary to popular belief, it is not becoming lower each successive year, except in a few small areas. If there is a general lowering of the water table over a large area, a decrease in the amount of rainfall in the area as a whole is probably the cause.

Vegetation

Practically all of Meriwether County was once covered by forests. Clearing the areas so that cultivated crops could be grown was begun shortly after the land was acquired from the Indians in 1825. Clearing operations continued until about 1920, when approximately 60 percent of the land was cultivated, and nearly all of the remaining acreage had been cut over for timber.

About 216,000 acres in the county is now covered by trees, and a few thousand additional acres of idle land will probably become forested within the next few years. These forests consist largely of stands of loblolly pine. Pine Mountain, however, is largely covered by oak, hickory, and a few longleaf pines. Many of the flood plains have stands of gum, ash, maple, poplar, beech, and willow. Many of the stands of loblolly pine contain numerous spots of shortleaf pine and gum, and many of them are understocked. A fire-protection unit has been in operation in the county for several years. During that time no forest fire has burned over more than a few acres.

Pine has reseeded naturally on many idle areas. In addition, hundreds of acres have been set out in recent years to loblolly pine seedlings grown by the Georgia Forestry Commission.

An estimated 20,000 acres of woodland is pastured. These areas of woods range are scattered throughout the county and are about equally divided between the loblolly pine forest type and the bottom-land hardwood type. The range plants, which furnish grazing in the woodland, are little bluestem, lespedeza, tickclover, broomsedge, big bluestem, panicum, and honeysuckle.

Social and Industrial Development

In 1825 the area that is now Meriwether County was obtained by the State of Georgia through the Treaty of Indian Springs. This treaty transferred all the land between the Flint and Chattahoochee Rivers from the Creek Indians to the State of Georgia. From this tract the counties of Carroll, Coweta, Troup, Muscogee, and Lee were created. Meriwether County, originally part of Troup County, was organized on December 14, 1827.

Settlers came mainly from areas east of Meriwether County, mostly from Wilkes, Elbert, Monroe, Jasper, and Putnam Counties. They planted corn, rye, wheat, oats, barley, and cotton, and they raised livestock for use on the farm. The principal market for farm products was Columbus.

In 1960 the population of the county was 19,756. Of this, 21 percent was urban, 60 percent was rural nonfarm, and 19 percent was rural farm. There has been a slight decline in population during the past few years. The population was 22,055 in 1940 and 21,055 in 1950.

High schools are located in Greenville, Woodbury, Warm Springs, Manchester, and Alvaton. There are also grammar schools in those towns and in several other towns. Schoolbuses operate in nearly all areas. There are about 60 churches in the county.

Electricity and telephone service are available in nearly all rural areas. Most farm homes have radio and television sets, and about half have telephones.

U.S. Highway 27A extends from north to south across the county. State Highways 18, 41, 85, 85W, 109, and 190 also pass through the county. All of these highways and many of the county roads are paved. Most of the other county roads are surfaced with sandy or gravelly material and are serviceable throughout the year. The county is crossed by several railroads.

Markets are available in the county for cotton, corn, grain, and pimento peppers. There are also shipping points for peaches. The State Farmers Markets in Atlanta and Columbus are sales outlets for vegetables, melons, and some fruits. Livestock sales barns in La Grange, Newnan, and Thomaston are used by local producers of livestock. No farm is more than 25 miles from one of these sale barns.

Sawmills and pulpwood yards are located throughout the county. They provide a continuous market for lumber and wood products.

Numerous small mills, plants, and industries that employ many of the people in rural areas are located in this county. Some of these are operated full time, but many are operated on a seasonal or part-time basis. Manchester has railroad yards, shops, a cotton mill, and plants where clothing is manufactured. Woodbury has a veneer and planing mill and a processing and packaging plant for pimento peppers and dates. There are clothing manufacturing plants at Greenville, and a company at Durand builds equipment and machinery for use in packing peaches. Many sawmills, sheds where peaches are packed for shipping, and yards where pulpwood is received and loaded are located throughout the county.

Agriculture

Farming has undergone a gradual but significant change in the past several years. In 1954, the total number of farms in the county was 1,573. Five years later, in 1959, this number had decreased by more than one-third, and there were only 909 farms in the county. The number of farms less than 50 acres in size was reduced by more than half between 1954 and 1959, and the number of farms between 50 and 259 acres in size decreased by about one-third. During the same period, farms larger than 260 acres decreased in number from 194 to 165, or about 15 percent. The number of tractors, trucks, and other mechanical equipment increased rapidly during the period from 1949 to 1954.

The acreage of cotton and corn has decreased since 1949; that of oats and hay has fluctuated rather widely. The number of peach trees declined by about one-fourth in the 5 years from 1949 to 1954, but it has remained fairly stable since that time. Income from the sale of vegetables increased greatly from 1949 to 1959. Table 2 shows the acreage of the principal crops grown in the county during the period 1949–59.

Income from the sale of livestock and livestock products accounted for nearly 34 percent of the farm income in 1959. Table 3 shows the number and kinds of livestock in

the county in stated years and the quantities of some of the livestock products that were sold.

TABLE 2.—*Acreage of principal crops and number of peach trees in stated years*

Crop	1949	1954	1959
	Acres	*Acres*	*Acres*
Corn for all purposes	23, 815	16, 843	10, 071
Cotton harvested	21, 754	13, 631	8, 167
Oats harvested	2, 311	3, 757	1, 570
Hay crops, total	3, 340	8, 103	5, 243
	Number	*Number*	*Number*
Peach trees of all ages	414, 770	303, 154	294, 357

TABLE 3.—*Livestock on farms and livestock products sold in stated years*

Livestock	1950	1954	1959
Horses and mules (number)	2, 515	1, 759	1, 015
Hogs and pigs (number)	6, 034	4, 972	5, 641
Cattle and calves (number)	9, 459	15, 553	12, 814
Milk cows (number)	3, 681	3, 659	2, 508
Whole milk sold (gallons)	960, 985	1, 108, 760	1, 163, 754
Chickens sold (number)	10, 467	43, 852	46, 324
Eggs sold (dozens)	82, 453	159, 474	503, 657

How Soils Are Mapped and Classified

Soil scientists made this survey to learn what kinds of soils are in Meriwether County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug or bored many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Cecil and Habersham, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that go with their behavior in the natural, untouched landscape. Soils of one series can differ somewhat in texture of the surface layer and in slopes, stoniness, or some other characteristic that affects use of the soils by man.

Many soil series contain soils that differ in the texture of their surface layer. According to such differences in texture, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Cecil sandy loam and Cecil sandy clay loam are two soil types in the Cecil series. The difference in texture of their surface layers is apparent from their names.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into phases. The name of a soil phase indicates a feature that affects management. For example, Cecil sandy loam, 2 to 6 percent slopes, is one of several phases of Cecil sandy loam, a soil type that ranges from nearly level to hilly.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodland, buildings, field borders, trees, and other details that greatly help in drawing boundaries accurately. The soil map in the back of this report was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientists have a problem of delineating areas where different kinds of soils are so intricately mixed, and so small in size, that it is not practical to show them separately on the map. Therefore, they show this mixture of soils as one mapping unit and call it a soil complex. Ordinarily, a soil complex is named for the major kinds of soil in it, for example, Madison-Gullied land complex, 6 to 10 percent slopes. Also, on most soil maps, areas are shown that are so rocky, so shallow, or so frequently worked by wind and water that they scarcely can be called soils. These areas are shown on a soil map like other mapping units, but they are given descriptive names, such as Alluvial land or Rock land, and are called land types rather than soils.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soils in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soils. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in a way that it is readily useful to different groups of read-

ers, among them farmers, ranchers, managers of woodland, engineers, and homeowners. Grouping soils that are similar in suitability for each specified use is the method of organization commonly used in the soil survey reports. Based on the yield and practice tables and on other data, the soil scientists set up trial groups, and test them by further study and by consultation with farmers, agronomists, engineers, and others. Then the scientists adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

In mapping a county or other large tract, it is fairly easy to see differences in the soils and landscape as one travels from place to place. There are many obvious differences, among them differences in the shape, gradient, and length of slopes; in the number and size of streams; in the width of the flood plains or valleys that border the streams; in the kinds of native plants; and even in the kinds of agriculture. With these obvious differences, there are less easily noticed differences in the patterns of soils. The soils differ along with other parts of the environment.

By drawing lines around the different patterns of soils on a small map, one may obtain a map of the general soil areas, or, as they are sometimes called, soil associations. Such a map is useful to those who want only a general idea of the soils, who want to compare different parts of a county, or who want to locate large areas suitable for some particular kind of agriculture or other broad land use.

The eight principal soil associations in Meriwether County are shown on the colored map in the back of this report. Within each of these soil associations, the pattern of soils is fairly uniform, although a few areas of other soils may be included. A brief description of the eight soil associations follows. More detailed information about individual soils in the associations can be obtained from the detailed soil map and by reading the section "Descriptions of the Soils."

1. Alluvial Land-Chewacla Association

Somewhat poorly drained soils on nearly level first bottoms

This soil association is in narrow strips on the flood plains of the many streams of the county. The areas are flooded nearly every year, and the dominant soils are somewhat poorly drained. Most of the soils are variable in texture, especially at a depth of 10 or more inches, but the Chewacla soils have a surface layer that is uniform silt loam. This association makes up about 10 percent of the county.

Alluvial land, moderately wet, occupies about half the acreage. It generally consists of light yellowish-brown to light brownish-gray loamy sand and sandy loam. Alluvial land and Alluvial land, wet, are similar to Alluvial land, moderately wet, but they are of much smaller extent.

Chewacla soils occupy a large acreage along the larger streams in the association. They are somewhat poorly drained, and they have a more uniform profile than the other soils.

Wehadkee soils occupy most of the remaining acreage. They are grayish and have a surface layer of silty clay loam. Below the surface layer is silt loam to silty clay loam. The Wehadkee soils are poorly drained; the water table is within 10 inches of the surface during much of the year.

More than 80 percent of the acreage in this association is in capability subclass IIIw, and about 80 percent of the acreage is wooded. Only a few farms are located entirely within the association, but most of the farms have a few acres of these soils. Corn is the chief field crop grown, and tall fescue is the main pasture grass.

2. Appling-Colfax Association

Deep, well-drained to somewhat poorly drained, moderately sloping to very gently sloping soils that have a surface layer of loamy sand and a mottled subsoil

This soil association consists of smoothly sloping soils in the northeastenr corner of the county. The surface layer of most of the soils is loamy sand, and their subsoil is mottled sandy clay loam to clay. The association occupies about 10 percent of the county.

The Appling soils are on the higher ridges and make up more than half the association. They develop in material weathered from granite, gneiss, and schist. The Appling soils are well drained, and they have a thick subsoil of sandy clay to clay.

The Colfax soils are somewhat poorly drained. They are in and around drainage heads or on the smooth lower slopes. They occupy 20 to 25 percent of the acreage. Their subsoil is mottled olive-brown, brownish-yellow, and gray sandy clay loam.

A few areas of Cecil, Madison, Lloyd, Vance, Louisburg, and Iredell soils are within this association. The Cecil, Madison, Lloyd, and Vance soils have a subsoil of yellowish-red to dark-red clay loam to clay. The Louisburg soils are shallow to granitic rock. The Iredell soils have an extremely firm subsoil that is plastic when wet.

About 70 percent of this association is wooded, and 20 percent is in field crops. The rest is used for pasture or for other purposes. The trees are mainly loblolly pine, sweetgum, and oak. The farms in the association are generally of moderate size and are operated by the owner. Most of them are planted to general crops, chiefly cotton, corn, pimento, peppers, and oats. There are a few dairy farms, beef cattle farms, truck farms, and poultry farms.

3. Madison Association

Deep, well-drained, highly micaceous soils that have a loamy surface layer and a subsoil of red clay loam

This soil association consists of very gently sloping to sloping, micaceous soils on broad to narrow interstream divides. The soils that have the strongest slopes are along the many branching drainageways. The surface layer in much of the acreage is sandy loam, but a few areas are gravelly or cobbly. In addition, there is a large acreage of soils that are severely eroded, and the texture of their surface layer is generally sandy clay loam. This association covers most of the northwestern quarter of the county

and smaller areas in the southern and western parts. It occupies about 40 percent of the total acreage in the county.

The Madison soils are dominant. They are well drained and formed in material weathered chiefly from mica schist. The Madison soils have a thick B horizon of red clay loam that contains mica flakes. Soft, weathered mica schist is generally within 3 feet of the surface, and in most places hard bedrock is 20 feet or more below the surface.

The Cecil, Appling, and Lloyd soils are all fairly extensive. They are in positions similar to those occupied by the Madison soils, but they lack the abundant mica that is present in the Madison soils. Many areas of the Louisburg and Louisa soils are steep. The Louisburg and Louisa soils have no B horizon or only a weakly developed B horizon.

About 65 to 70 percent of this association is wooded. The stands are made up mainly of loblolly pine that grows in old, abandoned fields, but there are some stands of shortleaf pine, oak, and sweetgum. The acreage that has been cleared is about evenly divided between field crops and pasture. Corn, small grains, cotton, hay, and pimento peppers are the principal field crops. Dairy cattle provide the chief source of income on many of the farms, but there are also some farms where beef cattle are raised or general crops are grown. The dairy farms are larger than the average farm in the county.

4. Lloyd-Davidson-Cecil Association

Deep, well-drained, dark-colored soils that have a red, clayey subsoil

This association consists of soils on broad divides and in areas where the slopes are smooth and range from 2 to 25 percent. Many drainageways occur throughout the association, and the flood plains along them are generally narrow. This association occupies about 5 percent of the county. The areas are near Greenville, north of Woodbury, and northwest of Gay.

The dominant soils in this association formed in material weathered from both basic and acidic rocks. The Lloyd soils formed in material from mixed rocks, such as diorite, hornblende, gneiss, and schist; the Davidson, in material from diorite, hornblende, and other basic rocks; and the Cecil, in material from gneiss, granite, schist, and other acidic rocks. Depth to bedrock is commonly more than 10 feet.

The Lloyd soils make up nearly half of this association. They generally have a surface layer of dark-brown sandy loam over a subsoil of red or dark-red clay. Where the soils are severely eroded, the surface layer is dark reddish-brown clay loam.

Between 25 and 30 percent of this association consists of Davidson soils. These soils are on smooth slopes. They have a surface layer of dark reddish-brown loam and a thick subsoil of dark-red clay. The surface layer is clay loam where the soils are severely eroded.

The Cecil soils occupy 10 to 15 percent of the acreage. They have a surface layer of yellowish-brown sandy loam and a subsoil of red clay. The surface layer is generally yellowish-red sandy clay loam where the soils are severely eroded.

The Appling, Louisburg, and Madison soils together make up about 10 percent of this association. The Appling soils have a surface layer of loamy sand and a clay subsoil of brown to yellowish red. They developed in material from gneiss, granite, and schist. The Louisburg soils have a surface layer of loamy coarse sand that overlies weathered granitic rock. The Madison soils generally have a surface layer of brown sandy loam over a subsoil of friable, highly micaceous, red clay loam.

More than half of the acreage in the Lloyd-Davidson-Cecil association is wooded. There are several large peach orchards. The growing of pasture crops, small grains, pimento peppers, corn (fig. 2), and cotton are important enterprises.

5. Cecil-Madison-Appling-Lloyd Association

Deep, well-drained soils on ridges and slopes in the uplands

This soil association is on interstream divides and in areas where the slope is between 2 and 25 percent. It is highly dissected by the heads of drainageways that reach almost to the tops of the ridges. The flood plains along these drainageways are narrow near the heads but are wider downstream. The surface layer of these soils is mainly sandy loam or loamy sand, and the subsoil is strong-brown to red clay loam to clay. This association occupies about 28 percent of the county. It extends from the north-central part to the central and southwestern parts.

The Cecil, Madison, Appling, and Lloyd soils formed primarily in material weathered from gneiss, schist, granite, and other acidic rocks. The Lloyd soils, however, formed partly in material weathered from diorite, hornblende, and other basic rocks. Depth to bedrock is commonly more than 10 feet.

The Cecil soils make up 30 to 40 percent of this association. They are generally on ridgetops or on smooth slopes. The surface layer is generally yellowish-brown sandy loam, and the subsoil is red clay. Where the soils are severely eroded, the surface layer is yellowish-red sandy clay loam.

The Madison soils make up nearly 20 percent of the association. They are highly micaceous throughout.

The Appling soils occupy 15 to 20 percent of the association. They have a surface layer of loamy sand and a subsoil of strong-brown clay to sandy clay. The surface layer is yellowish-brown sandy clay loam where the soils are severely eroded.

The Lloyd soils occupy 10 to 15 percent of the association. The surface layer of these soils is generally dark-brown sandy loam, and the subsoil is red or dark reddish-brown clay loam.

The rest of this association is made up of Louisburg, Louisa, Musella, and Vance soils. The Louisburg soils have a surface layer of loamy coarse sand, and the Louisa soils have a surface layer of coarse sandy loam. The surface layer overlies weathered rock. The B horizon is only slightly developed or is absent. The Musella soils have a surface layer and subsoil of clay loam. The Vance soils have a surface layer of coarse sandy loam. There is an abrupt boundary between the surface layer and the subsoil of very firm clay.

About two-thirds of the association is wooded, and most of the rest is fairly evenly divided between field crops and

Figure 2.—**Corn growing in a field of Davidson loam, 6 to 10 percent slopes, eroded, that has been terraced.**

pasture. The wooded areas consist mostly of loblolly pines, and the pastures are used for both dairy and beef cattle. The cultivated crops grown are corn, small grains, cotton, pimento peppers, peaches, and a few vegetables, such as squash, green beans, and tomatoes. The farms in this association are generally operated by the owner. Several thousand acres of woodland are owned by large pulp and paper companies.

6. Cecil-Louisburg Association

Deep to shallow soils over granitic rocks on broad divides or slope breaks

The soils in this association are on ridgetops or on broken slopes. They developed in material weathered largely from granite. Depth to bedrock ranges from a few inches in some of the Louisburg soils to more than 10 feet in most of the Cecil soils. The slopes are short and irregular. Stony areas are common, and there are several large rock outcrops. This association makes up about 2 percent of the county. It is east and southeast of Greenville.

The Cecil soils occupy about half of the acreage. They are generally on ridgetops. The Cecil soils commonly have a surface layer of yellowish-brown sandy loam and a thick subsoil of red clay. Where the Cecil soils are severely eroded, the surface layer is yellowish-red sandy clay loam.

The Louisburg soils occupy most of the remaining acreage. They are on short, irregular slopes, and they are generally shallow over bedrock (fig. 3). These soils commonly have stones on the surface and throughout the profile. They have a surface layer of loamy coarse sand over granitic rock that in places is highly weathered. The Louisburg soils have only a slightly developed or no B horizon.

About three-fourths of the association is wooded. Much of the wooded acreage is in loblolly pines, but there are several stands of oak and hickory on some of the Louisburg soils. A few areas are used for cultivated crops, such as cotton, corn, small grains, and pimento peppers. Several areas are in bermudagrass, bahiagrass, or sericea lespedeza grown for pasture.

6. Cobbly and Gravelly Land-Habersham Association

Cobbly or gravelly soils from sandstone and quartzite on Pine Mountain

This soil association consists of soils on a few smooth ridgetops and in many steep areas on Pine Mountain. The soils developed in residual material from sandstone and

Figure 3.—**Rock outcrops, cobbles, and stones on a Louisburg stony loamy coarse sand. This area is typical of association 6.**

quartzite, and they have a surface layer of cobbly or gravelly loamy sand. There are many stony areas and small rock outcrops on the steeper slopes. This soil association makes up about 3 percent of the county.

Cobbly and gravelly land is on narrow ridgetops or in steep areas. It is somewhat excessively drained and consists of cobbly loamy sand in which there has been little or no development of a B horizon. This land type occupies about 80 percent of the association.

The Habersham soils are on smooth ridgetops. They are well drained. The Habersham soils have a surface layer of gravelly loamy sand and a subsoil of thick clay loam. They occupy about 20 percent of the association.

Cobbly and gravelly land is nearly all in oak and hickory. The Habersham soils are mostly in loblolly pine, but a few areas are used for pasture or corn.

8. Thurmont-Braddock Association

Deep, well-drained, brown or red soils on lower slopes of Pine Mountain

This soil association consists of low, smooth ridges of old colluvium from Pine Mountain. These ridges are highly dissected by branching drainageways that have very narrow flood plains. The surface layer of the soils is mainly sandy loam or loamy sand, but a few areas are gravelly. This association occupies a long, narrow strip along the north side of Pine Mountain in the southeastern part of the county. It makes up about 2 percent of the county.

The dominant soils of the association, the Thurmont and Braddock, are about equal in acreage. They are well drained and have a thick subsoil. The Thurmont soils have a surface layer of loam sand and a subsoil of yellowish-brown clay loam. The Braddock soils have a surface layer of sandy loam and a subsoil of red to yellowish-red clay.

Most of the acreage is wooded, but some is used for general farming. Corn, pimento peppers, small grains, cotton, and pasture are the main crops.

Descriptions of the Soils

This section is provided for those who want fairly detailed descriptions of the soil series and mapping units in Meriwether County. For more general information about the soils of the county, the reader can refer to the section "General Soil Map," in which broad patterns of soils are described; or, if he wants detailed, technical descriptions of soil series, he can refer to the section "Formation, Morphology, and Classification of Soils."

In the pages that follow, the soil series and mapping units of the county are described in alphabetic order, by the name of the series. Each series is described, and then the individual mapping units of that series. A soil profile is described under the first mapping unit of the series, and this profile is considered typical for all the mapping units of that series. The profile of some mapping units in a series differs somewhat from the typical profile, but these differences are evident in the name of the mapping unit or are pointed out in the description. Unless otherwise stated, the profile is that of a moist soil.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map in the back of the report. The description of each mapping unit ends with a reference to the capability unit, woodland suitability group, and wildlife group in which the soil has been placed. Capability units, woodland suitability groups, and wildlife groups are described in the section "Use and Management of the Soils."

Descriptions of soil series and mapping units contain some technical terms because there is no nontechnical term that conveys precisely the same meaning. Technical terms are defined in the Glossary.

The acreage and proportionate extent of the soils are given in table 4. Their location is shown on the soil map at the back of the report.

TABLE 4.—*Approximate acreage and proportionate extent of the soils mapped*

Soil	Acres	Percent	Soil	Acres	Percent
Alluvial land	1, 590	0. 5	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	1, 790	0. 6
Alluvial land, moderately wet	19, 940	6. 2	Appling-Gullied land complex, 6 to 10 percent slopes	480	. 1
Alluvial land, wet	880	. 3	Augusta sandy loam	1, 030	. 3
Altavista fine sandy loam, 2 to 6 percent slopes	1, 800	. 6	Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded	280	. 1
Appling loamy sand, 2 to 6 percent slopes	2, 690	. 8	Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded	480	. 1
Appling loamy sand, 2 to 6 percent slopes, eroded	21, 600	6. 8	Braddock sandy loam, 2 to 6 percent slopes, eroded	700	. 2
Appling loamy sand, 6 to 10 percent slopes, eroded	10, 500	3. 3			
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	3, 200	1. 0			

TABLE 4.—*Approximate acreage and proportionate extent of the soils mapped*—Continued

Soil	Acres	Percent
Braddock sandy loam, 6 to 10 percent slopes, eroded	1,240	0.4
Braddock sandy loam, 10 to 15 percent slopes, eroded	1,300	.4
Braddock sandy loam, 15 to 25 percent slopes, eroded	1,050	.3
Buncombe loamy sand	400	.1
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	5,800	1.8
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	12,000	3.8
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	8,800	2.8
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	240	.1
Cecil sandy loam, 2 to 6 percent slopes	320	.1
Cecil sandy loam, 2 to 6 percent slopes, eroded	16,700	5.2
Cecil sandy loam, 6 to 10 percent slopes	730	.2
Cecil sandy loam, 6 to 10 percent slopes, eroded	9,680	3.0
Cecil sandy loam, 10 to 15 percent slopes, eroded	2,830	.9
Cecil-Gullied land complex, 6 to 10 percent slopes	2,400	.8
Cecil-Gullied land complex, 10 to 15 percent slopes	940	.3
Chewacla silt loam	13,600	4.3
Cobbly and gravelly land, sloping	960	.3
Cobbly and gravelly land, strongly sloping	1,350	.4
Cobbly and gravelly land, steep	12,200	3.8
Colfax loamy coarse sand, 2 to 6 percent slopes	1,550	.5
Colfax loamy coarse sand, 6 to 10 percent slopes	600	.2
Colfax loamy coarse sand, 6 to 10 percent slopes, eroded	170	.1
Colfax sandy loam, overwash, 2 to 6 percent slopes	3,500	1.1
Davidson clay loam, 2 to 6 percent slopes, severely eroded	480	.1
Davidson clay loam, 6 to 10 percent slopes, severely eroded	1,250	.4
Davidson clay loam, 10 to 15 percent slopes, severely eroded	1,350	.4
Davidson loam, 2 to 6 percent slopes, eroded	2,140	.7
Davidson loam, 6 to 10 percent slopes, eroded	1,440	.5
Davidson loam, 15 to 25 percent slopes, eroded	270	.1
Gullied land	200	.1
Habersham gravelly loamy sand, 2 to 6 percent slopes	750	.2
Habersham gravelly loamy sand, 6 to 10 percent slopes	1,350	.4
Habersham gravelly loamy sand, 10 to 15 percent slopes	1,150	.4
Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded	240	.1
Iredell sandy loam, 2 to 6 percent slopes, eroded	130	(1)
Lloyd clay loam, 2 to 6 percent slopes, severely eroded	4,300	1.3
Lloyd clay loam, 6 to 10 percent slopes, severely eroded	8,900	2.8
Lloyd clay loam, 10 to 15 percent slopes, severely eroded	3,600	1.1
Lloyd clay loam, 15 to 25 percent slopes, severely eroded	900	.3
Lloyd sandy loam, 2 to 6 percent slopes, eroded	9,900	3.1
Lloyd sandy loam, 6 to 10 percent slopes, eroded	5,700	1.8
Lloyd sandy loam, 10 to 15 percent slopes, eroded	2,800	.9
Lloyd-Gullied land complex, 6 to 10 percent slopes	1,800	.6
Lloyd-Gullied land complex, 10 to 15 percent slopes	1,700	.5
Local alluvial land	880	.3
Louisa coarse sandy loam, 6 to 10 percent slopes	220	0.1
Louisa coarse sandy loam, 10 to 15 percent slopes	650	.2
Louisa coarse sandy loam, 15 to 25 percent slopes	1,550	.5
Louisburg loamy coarse sand, 2 to 6 percent slopes	1,350	.4
Louisburg loamy coarse sand, 6 to 10 percent slopes	4,600	1.4
Louisburg loamy coarse sand, 10 to 15 percent slopes	5,220	1.6
Louisburg stony loamy coarse sand, 6 to 10 percent slopes	640	.2
Louisburg stony loamy coarse sand, 10 to 15 percent slopes	1,900	.6
Louisburg stony loamy coarse sand, 15 to 25 percent slopes	2,700	.8
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	3,600	1.1
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	13,600	4.3
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded	9,300	2.9
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded	1,350	.4
Madison sandy loam, 2 to 6 percent slopes, eroded	13,500	4.2
Madison sandy loam, 6 to 10 percent slopes, eroded	14,100	4.4
Madison sandy loam, 10 to 15 percent slopes, eroded	7,400	2.3
Madison sandy loam, 15 to 25 perdent slopes, eroded	3,500	1.1
Madison-Gullied land complex, 6 to 10 percent slopes	1,300	.4
Madison-Gullied land complex, 10 to 15 percent slopes	400	.1
Musella clay loam, 2 to 10 percent slopes, severely eroded	400	.1
Musella clay loam, 10 to 15 percent slopes, eroded	580	.2
Musella clay loam, 10 to 15 percent slopes, severely eroded	280	.1
Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded	490	.2
Roanoke silt loam	880	.3
Rock land	280	.1
Thurmont loamy sand, 2 to 6 percent slopes	2,030	.6
Thurmont loamy sand, 6 to 10 percent slopes	1,930	.6
Thurmont loamy sand, 10 to 15 percent slopes	720	.2
Vance loamy coarse sand, 2 to 6 percent slopes, eroded	780	.2
Vance loamy coarse sand, 6 to 10 percent slopes, eroded	510	.2
Vance loamy coarse sand, 10 to 15 percent slopes, eroded	310	.1
Vance sandy clay loam, 6 to 10 percent slopes, severely eroded	240	.1
Wehadkee silty clay loam	2,700	.8
Wickham fine sandy loam, 2 to 6 percent slopes, eroded	1,200	.4
Wickham fine sandy loam, 6 to 10 percent slopes, eroded	250	.1
Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded	230	.1
Worsham coarse sandy loam, 2 to 6 percent slopes	170	.1
Water	1,950	.6
Total	319,360	100.0

[1] Less than 0.05 percent.

Alluvial Land

Alluvial land (0 to 2 percent slopes) (Alm).—This miscellaneous land type is widely distributed along small streams in the county. It consists of deep, moderately well drained, strongly acid mixed alluvium deposited on nearly level flood plains. Most of the alluvium has been moved only a few hundred yards from its source or, at most, only a few miles. The areas are flooded occasionally.

This land type occurs with the Chewacla and Buncombe soils. In a few places it includes areas of those soils that are too small or too intricately mixed to be shown separately on the map. The texture is much more variable than that of the named soils nearby.

This land type is made up mainly of light yellowish-brown to light brownish-gray loamy sand and sandy loam. In many places, however, the soils contain layers that range in texture from coarse sand to silty clay loam. Coarse mottles or splotches are common at a depth below 24 inches.

The supply of organic matter and of available plant nutrients is low to medium. The crops respond well to fertilizer and commonly make moderate to high yields. Runoff is slow, and permeability and the rate of infiltration are rapid. The available moisture capacity is high.

Because it is nearly level and its permeability, tilth, and rate of infiltration are generally favorable, this land type is suited to sprinkler irrigation. A supply of water is nearby, and the areas are also suitable for impounding water in farm ponds.

This land is suited to pasture and to a limited number of crops grown locally. It can be used for row crops every year if an occasional cover crop is grown to maintain the supply of organic matter and good soil tilth.

Most of this land type is wooded. (Capability unit IIw–2; woodland group 4; wildlife group 9.)

Alluvial land, moderately wet (0 to 2 percent slopes) (Alp).—This miscellaneous land type is more poorly drained and has a higher water table than the Alluvial land not named as wet. It is also grayer, has a greater number of mottles near the surface, and is flooded more frequently and for longer periods. The areas are widely distributed along small streams.

The supply of organic matter in this land type is low to moderately high, and the supply of available plant nutrients is low to medium. Crops grown on this land respond well to fertilizer, and yields are usually moderate to high. Surface runoff is slow, the rate of infiltration and of permeability are moderate to rapid, and the available moisture capacity is high. Except in a few wet spots, tilth is generally good. Ditching is required to remove excess surface water and to improve internal soil drainage.

Because it is nearly level, and permeability, tilth, and the rate of infiltration are generally favorable, this land type is suited to sprinkler irrigation. A supply of water is nearby, and the areas are also suitable for impounding water in farm ponds.

This land type is suited to pasture and to a limited number of crops grown locally. It can be used for cultivated crops every year if an occasional cover crop is included in the cropping system.

This land type occupies more than 6 percent of the total acreage in the county. Most of it is wooded. (Capability unit IIIw–2; woodland group 11; wildlife group 10.)

Alluvial land, wet (0 to 2 percent slopes) (Avp).—This miscellaneous land type is much more poorly drained and has a much higher water table than the Alluvial land not named as wet. It is also generally much grayer or has many more mottles nearer the surface. Many areas are covered by water several months each year.

The high water table and the lack of suitable drainage outlets make this land type poorly suited to most field crops and pastures. Where an adequate drainage system can be installed, the land is suited to corn or tall fescue. Most of this land type is wooded. (Capability unit IVw–1; woodland group 11; wildlife group 11.)

Altavista Series

The Altavista series consists of moderately well drained, strongly acid soils that have a subsoil of yellowish-brown sandy clay loam. The subsoil is mottled at a depth of about 17 inches. These soils developed in old alluvium on low stream terraces. The slopes are smooth and range from 2 to 6 percent.

These soils are on terraces with the Roanoke, Augusta, and Wickham soils. They are better drained and have a less grayish subsoil than the Roanoke or Augusta soils. They are less well drained than the Wickham soils, and their subsoil is brownish rather than red.

The Altavista soils are in small areas near the larger streams of the county. The native vegetation was oak, hickory, poplar, pine, maple, and elm. Most areas have been cleared and used for cotton, corn, pimento peppers, pasture, hay, and small grains.

Altavista fine sandy loam, 2 to 6 percent slopes (AkB).—This is the only Altavista soil mapped in the county. It is a deep, moderately well drained soil and is on low stream terraces. The following are the major horizons:

0 to 8 inches, dark grayish-brown, very friable fine sandy loam.
8 to 40 inches, yellowish-brown, friable sandy clay loam with yellowish-red and grayish mottles that increase in number with increasing depth; subangular blocky structure.
40 to 46 inches +, light-gray, firm clay with many mottles of brownish yellow; massive.

The subsoil ranges from sandy clay loam to clay loam in texture and from light yellowish brown to brownish yellow in color. A few rounded pebbles are on the surface and throughout the profile. In some places there is a layer of rounded pebbles below a depth of about 40 inches.

This soil is easily worked, and crops grown on it respond well to fertilizer. The content of organic matter and the supply of available plant nutrients are low to moderate. Surface runoff is slow, permeability and the rate of infiltration are moderate, and the available moisture capacity is moderately high.

This soil is suited to most of the crops grown locally, and yields are usually moderate to high under good management. Under cultivation this soil is subject to a slight to moderate hazard of erosion. Most of it is cultivated or in pasture. (Capability unit IIe–2; woodland group 6; wildlife group 1.)

Appling Series

The Appling series consists of well-drained, strongly acid soils that have a subsoil of strong-brown to yellowish-red, mottled sandy clay to clay. These soils developed in

residuum from granite, gneiss, and schist. They are on stream divides and in sloping areas adjoining drainageways. The slope ranges from 2 to 15 percent, but it is between 2 and 10 percent in more than 95 percent of the acreage.

These soils occur with the Colfax, Cecil, Louisburg, and Vance soils. They are better drained than the Colfax soils, and they have less gray mottling and more clay in the subsoil. Their subsoil is less red than that of the Cecil soils. Unlike the Louisburg soils, which have only a thin or no clayey layer in the profile, the Appling soils have a thick, clayey layer at a depth of about 11 inches. They have a thicker, more friable, less dense subsoil than the Vance soils.

Appling soils occupy large areas in the northeastern part of the county and smaller areas in all other parts. The native vegetation was oak, hickory, pine, and gum. Most areas have been cleared, and many are used for cotton, corn, pimento peppers, and pasture.

Appling loamy sand, 2 to 6 percent slopes (ApB).—This deep, well-drained soil of the uplands has a brownish, firm to friable, clayey subsoil. The following are the major horizons:

0 to 11 inches, light yellowish-brown, very friable loamy sand.
11 to 50 inches, yellowish-brown to strong-brown, firm to friable sandy clay loam over clay to sandy clay that is mottled with red and yellowish-brown; blocky structure.
50 to 64 inches +, mottled red, brown, yellow, and gray, highly weathered gneiss, granite, and schist that breaks down to sandy loam or sandy clay loam.

The color of the surface layer ranges from light yellowish brown to grayish brown, and in a few places the surface layer is 16 to 18 inches thick. In many places the color of the subsoil becomes redder, ranging to yellowish red, and is more highly mottled with increasing depth. In a few places 10 to 15 percent of the surface is covered by gravel, and there are a few cobblestones.

This soil is easily worked, and crops grown on it respond well to fertilizer. The content of organic matter and the supply of available plant nutrients are low to moderate. Surface runoff is slow, permeability is moderate, and the rate of infiltration is rapid. The available moisture capacity is moderately high. These characteristics make this soil well suited to most of the crops grown locally. Under good management, yields are moderate to high. In cultivated areas erosion is a slight to moderate hazard. About three-fourths of the acreage is cultivated or in pasture. (Capability unit IIe–2; woodland group 8; wildlife group 1.)

Appling loamy sand, 2 to 6 percent slopes, eroded (ApB2).—This eroded soil has a surface layer that is about 5 inches thinner than that of Appling loamy sand, 2 to 6 percent slopes. A few galled spots are included, where the surface layer is yellowish-brown sandy loam.

The gentle slopes, good tilth, thick rooting zone, favorable drainage, and moderately high available moisture capacity make this soil well suited to a number of different crops. In cultivated areas the hazard of further erosion is slight to moderate.

This soil occupies nearly 7 percent of the county and is the most extensive mapping unit. About 60 percent of the acreage is cultivated or in pasture (fig. 4), and the rest is either wooded or idle. (Capability unit IIe–2; woodland group 8; wildlife group 1.)

Figure 4.—Pasture of bahiagrass, annual lespedeza, and white clover in an area of Appling loamy sand, 2 to 6 percent slopes, eroded.

Appling loamy sand, 6 to 10 percent slopes, eroded (ApC2).—This eroded soil has a surface layer that is about 5 inches thinner than that of Appling loamy sand, 2 to 6 percent slopes. There are a few spots where material from the subsoil has been mixed with that in the surface layer, and in those areas the surface layer is yellowish-brown sandy loam.

A few small areas of a Louisburg soil have been included in the areas mapped. In the included soil the subsoil is thin and discontinuous and the rooting zone is shallow.

Because of the generally good tilth, favorable drainage, deep rooting zone, and moderately high available moisture capacity, Appling loamy sand, 6 to 10 percent slopes, eroded, is suited to a number of different crops. Slopes are strong enough, however, to cause medium surface runoff and a moderate to severe hazard of further erosion. About 65 percent of the acreage is wooded. (Capability unit IIIe–2; woodland group 8; wildlife group 1.)

Appling sandy clay loam, 6 to 10 percent slopes, severely eroded (AnC3).—The surface layer of this soil is about 5 inches thick and is yellowish-brown sandy clay loam. Directly below the surface layer is strong-brown clay that is mottled in the lower part with red and yellowish brown. This soil has steeper slopes than Appling loamy sand, 2 to 6 percent slopes, and the solum is 12 to 15 inches thinner. Also, surface runoff is more rapid and the rate of infiltration is slower. There are a few gullies, and some of them are 3 to 5 feet deep. Tilth is fair.

Because of the severe hazard of further erosion, fair tilth, medium rate of infiltration, and rapid runoff, this soil is not suited to regular cultivation. Under good management, however, it can be used occasionally for cultivated crops that are rotated with perennials. Nearly all of this soil has been cultivated at one time, but most of it is now wooded or idle. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Appling-Gullied land complex, 6 to 10 percent slopes (AnC4).—In the Appling soil in this complex, the surface layer is strong-brown sandy clay or sandy clay loam. The solum is only 18 to 25 inches thick, and much of it consists of the B3 horizon. Surface runoff is rapid, and the rate of infiltration is slow. There are many shallow, V-shaped gullies and a few U-shaped ones that are 3 to 5 feet deep. Tilth is poor.

Because of the numerous gullies, very severe hazard of erosion, and poor tilth, this soil is probably best suited to trees. It has been cultivated at one time, but it is now idle or in woods. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Appling sandy clay loam, 10 to 15 percent slopes, severely eroded (AnD3).—The surface layer of this soil is yellowish-brown sandy clay loam and is 4 to 5 inches thick. Directly below the surface layer is strong-brown clay. The total thickness of this soil over weathered rock is about 26 to 30 inches. There are a few gullies, and some of them are 3 to 5 feet deep.

Soil tilth is poor. The rate of infiltration is moderate, surface runoff is rapid, and the hazard of further erosion is very severe. These factors make this soil unsuitable for cultivation. The soil is probably best suited to trees, but it may be used for pasture if it is managed carefully. Most of it has been cultivated, but all of it is now wooded. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Augusta Series

The Augusta series consists of somewhat poorly drained, strongly acid soils that have a dark grayish-brown surface layer and a gleyed subsoil. The soils developed in old alluvium.

These soils occur with the Altavista and Roanoke soils on low stream terraces where the slopes are 0 to 2 percent. They are also near areas of Alluvial land on bottom lands. The Augusta soils have a grayer subsoil and are more poorly drained than the Altavista soils. Their subsoil is more friable and is better drained than that of the Roanoke soils. Unlike the areas of Alluvial land, which consist of recent alluvium, the Augusta soils developed in old alluvium and have distinct horizons.

Augusta sandy loam (0 to 2 percent slopes) (Afs).—This is the only Augusta soil mapped in the county. It is deep and somewhat poorly drained, and it formed in alluvium on low terraces along the larger streams. The following are the major horizons:

0 to 7 inches, dark grayish-brown, friable sandy loam.
7 to 13 inches, grayish-brown, friable sandy clay loam that is faintly mottled with yellowish red and gray.
13 to 30 inches, mottled gray or dark-gray, friable silty clay loam that has a moderate, subangular blocky structure.
30 to 50 inches +, light-gray to greenish-gray sandy clay loam to sandy loam mottled with yellowish red, reddish yellow, and grayish brown.

The color of the surface layer ranges from dark gray to light olive brown. The layer directly below the surface layer ranges from grayish brown to light yellowish brown in color and from heavy sandy loam to sandy clay loam in texture. The color of the subsoil ranges from dark gray to light brownish gray, and the texture, from silty clay loam to clay loam. The texture of the underlying material is variable, but the color is predominantly gray.

Including in the mapped areas of this soil are some areas of a soil that is covered by an overwash of coarse sand that is 4 to 7 inches thick. Also included are a few areas in which the surface layer is loamy sand, fine sandy loam, or silt loam.

Augusta sandy loam is low in fertility, but it responds well to fertilizer. The content of organic matter is moderate to low. The rate of infiltration is moderate, permeability is moderate to moderately slow, and surface runoff is slow. The available moisture capacity is high. Ditching is needed to remove excess surface water and to improve internal drainage.

This soil is suited to grain sorghum, corn, tall fescue, and whiteclover. It is moderately well suited to bermudagrass, lespedeza, bahiagrass, and crimson clover. About half of the acreage is used for corn or pasture, and the rest is wooded. (Capability unit IIIw–3; woodland group 11; wildlife group 10.)

Braddock Series

The Braddock series consists of deep, well-drained, strongly acid soils that have a reddish, friable to firm, clayey subsoil. The soils developed in old local alluvium washed from soils on Pine Mountain that are underlain by sandstone.

These soils are near the Thurmont, Habersham, Cecil, and Madison soils. Their subsoil is redder than that of the Thurmont soils. The Braddock soils formed in material that moved down from Pine Mountain. The Habersham, Cecil, and Madison soils formed in material that weathered from metamorphic rocks.

The Braddock soils are in fairly large areas in the southeastern corner of the county and along the southern border. They make up slightly less than 2 percent of the acreage in the county. The native vegetation was oak, hickory, pine, and poplar. Most of the acreage where the slope is less than 10 percent has been cleared and is used for cotton, corn, peppers, peaches, small grains, or pasture. About half the acreage where the slope is between 10 and 25 percent has also been cleared. Most of it is used for pasture or is in loblolly pine.

Braddock sandy loam, 2 to 6 percent slopes, eroded (BcB2).—This is a deep, well-drained soil that developed in old local alluvium at the base of Pine Mountain. The following are the major horizons:

0 to 10 inches, dark yellowish-brown, very friable sandy loam in the upper part and reddish yellow in the lower part; contains 15 to 20 percent gravel.
10 to 46 inches, red to yellowish-red, friable to firm clay to clay loam that has moderate, medium, subangular blocky structure; in places contains a few pebbles; in most places the uppermost few inches is sandy clay loam.
46 to 60 inches, highly weathered red, yellow, gray, and brown gneiss and schist.

The texture of the surface layer is chiefly sandy loam, but in many places it is loamy sand. In most places the texture is near the dividing line between sandy loam and loamy sand. In places there are common, fine, distinct, reddish-yellow mottles in the subsoil. In many places a layer of gravel 2 to 10 inches thick is at a depth of about 45 inches.

A few areas of a soil developed in residuum from sandstone and quartzite are included in the mapped areas of this soil. Generally, such areas are more gravelly than the typical Braddock soil.

Braddock sandy loam, 2 to 6 percent slopes, eroded, is easily worked, and crops grown on it respond well to fertilizer. The content of organic matter and the supply of available plant nutrients are low to moderate. Surface runoff is slow, permeability and the rate of infiltration are moderate, and the available moisture capacity is moderately high.

This soil is suited to most locally grown crops, but further erosion is a slight to moderate hazard in cultivated areas. Much of the acreage is wooded. (Capability unit IIe–1; woodland group 1; wildlife group 1.)

Braddock sandy loam, 6 to 10 percent slopes, eroded (BcC2).—This soil is steeper and slightly more eroded than Braddock sandy loam, 2 to 6 percent slopes, eroded, and it has slightly more rapid runoff. In a few places erosion has removed most of the original surface layer. In those areas the plow layer has some material from the subsoil mixed with it and is a reddish-yellow heavy sandy loam.

Because this soil generally has good tilth, favorable drainage, a deep rooting zone, and moderately high available moisture capacity, it is suited to a number of different crops. The slopes are strong enough, however, to cause medium surface runoff and a moderate to severe hazard of further erosion. Crops grown on this soil respond well to fertilizer. About two-thirds of the acreage is wooded. (Capability unit IIIe–1; woodland group 1; wildlife group 1.)

Braddock sandy loam, 10 to 15 percent slopes, eroded (BcD2).—This soil is steeper and has more rapid runoff than either of the previously described Braddock soils. In most places it is slightly more eroded. Depth to weathered rock or to a layer of gravel is commonly about 36 inches. In a few areas erosion has removed most of the original surface layer, and the plow layer has some material from the subsoil mixed with it. In those areas the plow layer is reddish-yellow heavy sandy loam.

If this soil is cultivated, the slope is strong enough and surface runoff is rapid enough that further erosion is a serious hazard. The soil is better suited to perennial pasture, hay, or trees than to cultivated crops.

About 80 percent of the acreage is wooded. The rest is about equally divided between cultivated crops and pasture. (Capability unit IVe–1; woodland group 1; wildlife group 2.)

Braddock sandy loam, 15 to 25 percent slopes, eroded (BcE2).—This soil has a thinner solum and steeper slopes than the other Braddock sandy loams in this county, and it has more rapid runoff. The surface layer is commonly 5 to 7 inches thick, and it overlies a subsoil that is 15 to 20 inches thick. Depth to weathered rock or to a layer of gravel is about 32 inches. A few small areas of a gravelly or stony soil that has little horizon development are included in the mapped areas of this soil.

The steep slopes and rapid runoff limit the suitability of Braddock sandy loam, 15 to 25 percent slopes, eroded, to perennial vegetation, such as pasture or trees. Nearly all of the acreage is now wooded. (Capability unit VIe–2; woodland group 1; wildlife group 2.)

Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded (BdC3).—This soil has a redder, finer textured plow layer and a thinner solum than Braddock sandy loam, 2 to 6 percent slopes, eroded. It also has more rapid runoff and a slower rate of infiltration. The plow layer is about 3 to 5 inches thick. Depth to weathered rock or to a layer of gravel is about 30 inches.

The content of organic matter is low, and soil tilth is poor. The hazard of further erosion is severe. The range of moisture favorable for tillage is narrow.

The severe erosion, poor tilth, and slow rate of infiltration make this soil better suited to perennial vegetation than to cultivated crops. The soil has been cultivated, but much of it is now in trees. (Capability unit IVe–1; woodland group 2; wildlife group 3.)

Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded (BdD3).—This soil has a redder, finer textured surface layer and a thinner solum than Braddock sandy loam, 2 to 6 percent slopes, eroded. It also has more rapid runoff and a slower rate of infiltration. The surface layer is about 3 to 5 inches thick, and it overlies a subsoil that is 18 to 20 inches thick.

The content of organic matter is low, and soil tilth is poor. The moisture range under which tillage is feasible is narrow.

The steep slopes, severe erosion, poor tilth, and rapid surface runoff limit the suitability of this soil to perennial vegetation. Most of the acreage has been cultivated, but nearly all of it is now wooded. (Capability unit VIe–2; woodland group 2; wildlife group 4.)

Buncombe Series

The Buncombe series consists of somewhat excessively drained, strongly acid soils of the flood plains. The soils have a surface layer and a subsoil of loamy sand. They developed in alluvium on first bottoms along Flint River and along the larger creeks of the county. The slopes range from 0 to 4 percent.

The Buncombe soils occur with the Chewacla and Wehadkee soils, but they are much better drained and much more sandy than those soils. The Buncombe soils are in small areas and occupy only a small acreage in the county.

Buncombe loamy sand (0 to 4 percent slopes) (Bfs).—This is the only Buncombe soil mapped in the county. It is a deep, somewhat excessively drained, very friable sandy soil that formed in recent alluvium. Most of the acreage is in narrow strips on natural levees along the large streams. The following are the major horizons:

0 to 8 inches, pale-brown loamy sand.
8 to 48 inches +, pale-yellow loamy sand with faint mottles or splotches of white.

The color of the surface layer ranges from pinkish white to light yellowish brown, and the texture ranges from loamy sand to loamy fine sand. The soil material at a depth between 8 and 48 inches ranges from pale yellow or light gray to light brownish gray. In places a layer of fine sandy loam to silt loam is at a depth of 30 inches or more.

This soil is easily worked, but the content of organic matter and the supply of available plant nutrients are low. Surface runoff is slow, permeability and the rate of infiltration are rapid, and the available moisture capacity is low.

This soil is suited to most locally grown crops, and under good management moderate yields may be expected. The crops respond well to fertilizer. Most of this soil has been cleared and cultivated, but much of it is now wooded. (Capability unit IIIs–1; woodland group 4.)

Cecil Series

The Cecil series consists of deep, well-drained, strongly acid soils that have a red, firm, clayey subsoil. The soils formed in residuum from gneiss, granite, and schist. They are on broad stream divides and in sloping areas adjoining drainageways. The slopes range from 2 to 25 percent, but in most of the acreage they are less than 10 percent.

The Cecil soils occur in the uplands with the Louisburg, Lloyd, Madison, and Appling soils. They have a thicker solum, more distinct horizons, a redder color, and a finer texture than the Louisburg soils. They are lighter colored than the Lloyd soils, and they developed in residuum from acid rocks rather than in residuum from mixed acid and basic rocks. The Cecil soils have less mica throughout than the Madison soils. They have a red subsoil instead of a reddish-yellow, strong-brown, or mottled subsoil like that of the Appling soils.

Large areas of Cecil soils are east, south, and southwest of Greenville. Much of the acreage has been cleared and is used for crops. The native vegetation was oak, hickory, pine, poplar, and gum.

Cecil sandy loam, 2 to 6 percent slopes, eroded (CYB2).—This deep, well-drained soil of the uplands has a red, firm, clayey subsoil. The following are the major horizons:

0 to 6 inches, yellowish-brown, very friable sandy loam.
6 to 37 inches, red, firm clay to clay loam; moderate, subangular blocky structure; the uppermost few inches is generally sandy clay loam.
37 to 50 inches +, highly weathered gneiss and schist splotched with red, reddish yellow, brown, light gray, and black; breaks down to clay loam.

The texture of the surface layer is chiefly sandy loam, but in most places it is near the dividing line between sandy loam and loamy sand. In many places the surface layer is sandy loam or loamy sand, and in a few places it is coarse sandy loam, loamy coarse sand, or loamy fine sand. In many places 10 to 15 percent of the surface is covered with gravel or cobbles, and in a few places gravel and cobbles cover as much as 25 percent of the surface. There are a few fine mottles of reddish yellow or yellowish brown in the subsoil.

Erosion is variable in this soil. In about 30 to 40 percent of the acreage, plowing has mixed some material from the yellowish-red subsoil with the surface soil in an irregular pattern. In other areas the plow layer is entirely within the original surface layer.

Included in the mapped areas of this soil are a few areas of a severely eroded soil that has a surface layer of reddish-yellow or yellowish-red heavy sandy loam or light sandy clay loam. In those areas some of the red clay from the subsoil has been mixed with the surface layer. Also included are a few areas of a Lloyd sandy loam that has a dark-brown to dark reddish-brown surface layer.

Cecil sandy loam, 2 to 6 percent slopes, eroded, has good soil tilth, and crops grown on it respond well to fertiliezr. The content of organic matter is low, and the supply of available plant nutrients is moderate to low. Surface runoff is slow, and permeability and the rate of infiltration are moderate. The available moisture capacity is moderately high.

This soil is suited to most locally grown crops. It can be cultivated intensively, but there is a slight to moderate hazard of further erosion. Most of the acreage has been cleared and cultivated. About 50 percent of it is used for cultivated crops, 10 percent is pastured, and the rest is wooded or idle. (Capability unit IIe–1; woodland group 5; wildlife group 1.)

Cecil sandy loam, 2 to 6 percent slopes (CYB).—The surface layer of this soil is about 6 inches thicker than the surface layer of Cecil sandy loam, 2 to 6 percent slopes, eroded. The uppermost 2 to 3 inches is dark grayish brown and overlies 7 to 12 inches of light yellowish-brown sandy loam. The subsoil is red, firm clay to clay loam. Most of the acreage has never been cleared. (Capability unit IIe–1; woodland group 5; wildlife group 1.)

Cecil sandy loam, 6 to 10 percent slopes (CYC).—This soil has a thicker surface layer, steeper slopes, and slightly faster runoff than Cecil sandy loam, 2 to 6 percent slopes, eroded. The uppermost 2 to 3 inchest of the surface layer is dark grayish brown, and below that is 6 to 10 inches of light yellowish-brown sandy loam. The subsoil is red clay to clay loam.

Because of its good tilth, favorable drainage, deep rooting zone, and moderately high available moisture capacity, this soil is suited to many kinds of crops. Slopes are strong enough, however, to cause medium surface runoff and a moderate to severe hazard of erosion. Most of the

acreage has never been cleared. (Capability unit IIIe–1; woodland group 5; wildlife group 1.)

Cecil sandy loam, 6 to 10 percent slopes, eroded (CYC2).—Because this soil is steeper than Cecil sandy loam, 2 to 6 percent slopes, eroded, surface runoff is slightly more rapid.

Included in the mapped areas of this soil are a few areas of a soil that has a shallow profile and that contains a thin, discontinuous clayey layer. Also included are areas of a soil that has a dark reddish-brown surface layer and a dark-red subsoil.

Cecil sandy loam, 6 to 10 percent slopes, eroded, has good soil tilth, favorable drainage, and a deep rooting zone. Many kinds of crops are suited to it. The slopes are strong enough, however, to cause medium surface runoff and a moderate to severe hazard of further erosion. About 65 percent of the acreage is wooded. (Capability unit IIIe–1; woodland group 5; wildlife group 1.)

Cecil sandy loam, 10 to 15 percent slopes, eroded (CYD2).—The solum of this soil is about 6 inches thinner than that of Cecil sandy loam, 2 to 6 percent slopes, eroded, and surface runoff is more rapid. Depth to weathered rock is 30 to 32 inches.

A few small areas of a severely eroded soil that has a surface layer of yellowish-red heavy sandy loam are included in the mapped areas of this soil. Also included are a few areas of a soil that has a shallow profile and a thin and discontinuous clayey horizon.

The strong slopes of Cecil sandy loam, 10 to 15 percent slopes, eroded, cause a severe hazard of further erosion if this soil is cultivated. Therefore, the soil is better suited to perennial vegetation than to cultivated crops. Much of the acreage has been cleared and cultivated, but about three-fourths of it is now wooded. (Capability unit IVe–1; woodland group 5; wildlife group 2.)

Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded (CZB3).—The solum of this severely eroded soil is about 8 inches thinner than that of Cecil sandy loam, 2 to 6 percent slopes, eroded, and this soil has a redder and finer textured surface layer. The plow layer is yellowish-red to red sandy clay loam, and it is 4 to 6 inches thick. It is composed of remnants of the surface layer mixed with part of the subsoil.

The rate of infiltration is slower than that of Cecil sandy loam, 2 to 6 percent slopes, eroded, and tilth is poorer. The range of moisture conditions favorable for tillage is narrow.

This soil is suited to a wide range of crops, but there is a moderate to severe hazard of further erosion. Nearly all of the acreage has been cultivated, but more than half is now in forest. (Capability unit IIIe–1; woodland group 7; wildlife group 3.)

Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded (CZC3).—The solum of this severely eroded soil is about 10 inches thinner than that of Cecil sandy loam, 2 to 6 percent slopes, eroded, and the surface layer is redder and finer textured. The plow layer is yellowish-red or red sandy clay loam, and it is 4 to 5 inches thick. It is made up mostly of material from the subsoil mixed with a small amount of material from the original surface layer. The boundary is abrupt between the plow layer and the layer of red clay below. There are many shallow gullies and a few that are 3 to 5 feet deep.

Surface runoff is more rapid than on Cecil sandy loam, 2 to 6 percent slopes, eroded. The rate of infiltration is slower, and soil tilth is poorer. The range of moisture that is favorable for tillage is narrow, and the slope is strong enough to make further erosion a severe hazard.

This soil is better suited to perennial vegetation than to cultivated crops. Cultivation can be done safely only occasionally. Most of the acreage has been cleared and cultivated, but about 75 percent of it is now in trees. The rest is about equally divided among pasture, cultivated crops, and idle areas. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded (CZD3).—This soil has a redder, finer textured surface layer and a thinner solum than Cecil sandy loam, 2 to 6 percent slopes, eroded. The surface layer is yellowish-red to red sandy clay loam that is 4 to 5 inches thick. It is composed mainly of material from the subsoil. The thickness of the soil material over weathered rock is generally 24 to 30 inches. Shallow gullies are common, and a few gullies are 3 to 5 feet deep.

Surface runoff is rapid, the rate of infiltration is slow, and soil tilth is fair. The available moisture capacity is moderate.

This soil is probably best suited to perennial vegetation, such as trees or pasture. Most of the acreage has been cultivated, but about 90 percent of it is now in trees. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded (CZE3).—This severely eroded soil has a much thinner solum than Cecil sandy loam, 2 to 6 percent slopes, eroded. The surface layer is also redder and finer textured and is composed mainly of material from the subsoil. It is yellowish-red to red sandy clay loam that is 2 to 5 inches thick. The thickness of the soil material over weathered rock is generally 22 to 28 inches.

Surface runoff is rapid, the rate of infiltration is slow, and soil tilth is poor. The available moisture capacity is moderate. These factors create a very severe hazard of further erosion and make this soil better suited to trees than to other uses. All of the acreage is wooded. (Capability unit VIIe–1; woodland group 7; wildlife group 4.)

Cecil-Gullied land complex, 6 to 10 percent slopes (CZC4).—The Cecil soil in this complex is very severely eroded and is steeper than Cecil sandy loam, 2 to 6 percent slopes, eroded. It also has a thinner solum and a redder and finer textured surface layer. The solum is 18 to 24 inches thick, and the B3 horizon makes up a large part of it. The surface layer is red clay to clay loam. There are many galled spots and gullies; a few gullies are 4 to 8 feet deep.

Surface runoff is rapid, the rate of infiltration is slow, and soil tilth is poor. The available moisture capacity is moderate to low.

The gullies, poor tilth, and rapid runoff make this soil better suited to perennial vegetation than to cultivated crops. Nearly all of the acreage has been cleared and cultivated, but it is now either idle or in trees. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Cecil-Gullied land complex, 10 to 15 percent slopes (CZD4).—The Cecil soil in this complex is very severely eroded and is steeper than Cecil sandy loam, 2 to 6 percent slopes, eroded. It also has a much thinner solum and a

redder and finer textured surface layer. The solum in most places is only 15 to 20 inches thick. The surface layer is red clay to clay loam, and in many places it is made up largely of material from the B3 horizon. There are many gullies, and a few of them are 4 to 8 feet deep.

Surface runoff is rapid, the rate of infiltration is slow, and soil tilth is poor. The available moisture capacity is low. These factors make this soil best suited to perennial vegetation, such as kudzu or trees. Nearly all of the acreage has been cultivated, but most of it is now idle. (Capability unit VIIe–1; woodland group 7; wildlife group 4.)

Chewacla Series

The Chewacla series consists of somewhat poorly drained, very strongly acid soils that have a surface layer of silt loam and a variable subsoil. The soils developed in recent alluvium on nearly level flood plains.

These soils occur with the Buncombe and Wehadkee soils. They are more poorly drained and less sandy than the Buncombe soils, and they are better drained and less grayish than the Wehadkee soils.

The Chewacla soils are in moderately large areas along the larger streams of the county. They occupy about 4 percent of the acreage. The native vegetation was mainly oak, poplar, elm, willow, beech, gum, hickory, and a few pines. Most areas have been cleared and used for crops, but annual flooding and poor drainage have caused much of the acreage to revert to woodland.

Chewacla silt loam (0 to 2 percent slopes) (Csl).—This is the only Chewacla soil mapped in the county. It is a deep, somewhat poorly drained soil on first bottoms, and it is flooded annually. The following are the major horizons:

0 to 5 inches, dark-brown, friable silt loam.
5 to 14 inches, brown, very friable sandy loam.
14 to 30 inches, brown to pale-olive, friable sandy loam to sandy clay loam that is mottled with brownish yellow.
30 to 52 inches +, olive-gray, friable clay that is mottled with brown.

The color of the surface layer is generally brown or dark brown. In a few places, however, it is dark reddish brown, and in a few other places it is pale brown. In some places the subsoil is silt loam to silty clay loam to a depth of 30 inches. In some areas there are thin layers of loamy coarse sand throughout the profile.

Soil tilth is generally good, and crops grown on this soil respond well to fertilizer. The content of organic matter and the supply of available plant nutrients are low to moderate. Surface runoff is slow, permeability and the rate of infiltration are moderate, and the available moisture capacity is high.

This soil is suited to corn and many other field crops. Under good management high yields may be expected. Although flooding is a hazard and drainage ditches are needed, cultivated crops can be grown intensively. Nearly 90 percent of the acreage is wooded. The rest is about equally divided between pasture and cropland. (Capability unit IIIw–2; woodland group 11; wildlife group 10.)

Cobbly and Gravelly Land

This land type is on the ridges and slopes of Pine Mountain. In about 80 percent of the acreage, the slope is greater than 15 percent. Fragments of sandstone and quartzite, 1 to 10 inches in diameter, make up from 30 to 60 percent of the soil material. In some places the soil consists partly of material that has slipped or rolled down the slopes. Three mapping units of Cobbly and gravelly land, based on slope gradients, have been recognized in this county. The native vegetation was mostly oak and hickory, but it included a few longleaf pines.

Cobbly and gravelly land, sloping (6 to 10 percent slopes) (CgC).—This somewhat excessively drained mountain soil has a weakly developed profile. Many cobbles and pebbles occur throughout the profile. The following are the major horizons of one of the most common profiles:

0 to 8 inches, dark grayish-brown loamy sand; about 40 percent quartzite and sandstone cobbles and gravel.
8 to 26 inches, light yellowish-brown loamy sand; about 30 percent sandstone and quartzite gravel.
26 to 36 inches +, yellowish-red, partly weathered sandstone.

In places at a depth between 26 and 36 inches, the color of the soil material is yellowish red in the upper part and red in the lower part. In a few places there is a subsoil of red sandy loam to sandy clay loam that is 4 to 8 inches thick.

Surface runoff is slow and permeability is rapid. Because of the cobbles and gravel, this land type is poorly suited to cultivated crops. Most of it is wooded. (Capability unit VIs–1; woodland group 3; wildlife group 8.)

Cobbly and gravelly land, strongly sloping (10 to 15 percent slopes) (CgD).—The steeper slope is the main feature that distinguishes this land type from Cobbly and gravelly land, sloping. Many large stones are on the surface. There are also cobbles, pebbles, and a few rock outcrops.

The steep slopes, stones, abundance of cobbles, and low available moisture capacity make this land type better suited to perennial vegetation than to cultivated crops. Most of the acreage is wooded. (Capability unit VIs–1; woodland group 3; wildlife group 8.)

Cobbly and gravelly land, steep (15 to 60 percent slopes) (CgE).—Steeper slopes, the numerous stones, and the few rock outcrops distinguish this land type from Cobbly and gravelly land, sloping. In a few places a weak B horizon of red sandy clay loam has developed.

Included in this mapping unit are many small areas of a soil formed in colluvium. In places the included soil has a subsoil of red clay loam that is 6 to 12 inches thick.

The steep slopes, stones, and low available moisture capacity make Cobbly and gravelly land, steep, better suited to perennial vegetation than to cultivated crops. Nearly all of the acreage is wooded. (Capability unit VIIe–2; woodland group 3; wildlife group 8.)

Colfax Series

The Colfax series consists of somewhat poorly drained, very strongly acid soils that have a sandy surface layer and a subsoil of sandy clay loam. These soils developed primarily in residuum from granite and gneiss. In some places recent local alluvium has been added to the soils. The slope ranges from 2 to 10 percent, but in more than 80 percent of the acreage it is between 2 and 6 percent. These soils are around the heads of drains, in low saddles, and on the lower parts of slopes.

The Colfax soils are on slopes below the Appling, Cecil, and Vance soils. They are more poorly drained than those soils, and their subsoil is coarser textured and has a more olive and grayish color. The Colfax soils are in small areas, mostly in the northeastern part of the county. They occupy about 2 percent of the acreage.

The native vegetation was oak, hickory, gum, pine, poplar, elm, and beech. Much of the acreage has been cleared and is used for corn, small grains, cotton, and pasture.

Colfax sandy loam, overwash, 2 to 6 percent slopes (CpB).—This is a somewhat poorly drained soil of the uplands. It occurs at the base of slopes and around the heads of drains. The following are the major horizons:

0 to 15 inches, dark grayish-brown to brown sandy loam.
15 to 38 inches, grayish-brown to light olive-brown sandy clay loam that is mottled with yellowish brown, brownish yellow, and gray.
38 to 42 inches +, mottled gray, white, and yellowish-brown coarse sandy loam to sandy clay loam.

The color of the surface layer ranges from dark grayish brown or brown to light grayish brown. The overwash material is mostly sandy loam, but in some areas it is loamy sand, and in others it is loam. This overwash material ranges from about 4 to 15 inches in thickness. In cultivated areas it has been mixed with the original surface soil, and there is no distinction between the two materials. In undisturbed areas there is a sharp line showing where the original surface layer begins. Several nearly level or slightly concave areas that have slopes of 0 to 2 percent are included in the mapped areas of this soil.

Colfax sandy loam, overwash, 2 to 6 percent slopes, generally has fair tilth, but there are a few wet spots where the tilth is less favorable. The crops grown on this soil make medium response to fertilizer. The supply of available plant nutrients is low, and the content of organic matter is low to moderate. Surface runoff is slow, permeability is slow to moderate, and the rate of infiltration is moderate. The available moisture capacity is moderate to high.

This soil is suited to a limited number of crops. It can be cultivated intensively if excess water is removed. Most of the acreage has been cultivated, but more than half is now wooded. (Capability unit IIIw–3; woodland group 9; wildlife group 10.)

Colfax loamy coarse sand, 2 to 6 percent slopes (ClB).—The plow layer of this soil is light olive-brown to dark grayish-brown loamy coarse sand. It is underlain by a layer of grayish-brown to light yellowish-brown loamy sand to sandy loam that is transitional to the mottled subsoil. Included in the mapped areas of this soil are a few areas of an eroded soil. The included soil has a layer of mottled sandy clay loam at a depth of 6 to 8 inches.

In general, Colfax loamy coarse sand, 2 to 6 percent slopes, has fair to good soil tilth, but there are a few wet spots where the tilth is less favorable. Crops grown on this soil make medium response to fertilizer. The supply of available plant nutrients is low, and the content of organic matter is low to moderate. Surface runoff is slow, permeability is slow to moderate, and the rate of infiltration is moderate. The available moisture capacity is moderate to high.

This soil is suited to a limited number of crops, but it may be cultivated intensively if the excess water is removed. About 50 percent of the acreage has been cultivated, but about 80 percent of it is now wooded. (Capability unit IIIw–3; woodland group 9; wildlife group 10.)

Colfax loamy coarse sand, 6 to 10 percent slopes (ClC).—This soil has a plow layer of light olive-brown to dark grayish-brown loamy coarse sand. This layer overlies a layer of grayish-brown sandy loam that is transitional to the subsoil of mottled sandy clay loam. The thickness of the soil material over weathered rock is generally between 28 and 30 inches.

Included in the mapped areas of this soil are a few eroded areas where the plow layer is sandy loam and the subsoil is mottled sandy clay loam. The subsoil in the included areas is only 6 to 8 inches below the surface.

Colfax loamy coarse sand, 6 to 10 percent slopes, has fair soil tilth. Crops grown on it make medium response to fertilizer. The supply of available plant nutrients is low, and the content of organic matter is low to moderate. Surface runoff is slow, permeability and the rate of infiltration are moderate, and the available moisture capacity is moderate to high.

The fair soil tilth and the hazard of erosion make this soil better suited to perennial vegetation than to cultivated crops. Most of the acreage is in trees. (Capability unit VIe–2; woodland group 9; wildlife group 10.)

Colfax loamy coarse sand, 6 to 10 percent slopes, eroded (ClC2).—This soil has a surface layer of grayish-brown loamy coarse sand that is 4 to 6 inches thick. The surface layer is underlain by a subsoil of grayish-brown sandy clay loam. The subsoil has many mottles of yellowish brown and gray. The thickness of the soil material over weathered rock is 24 to 28 inches. Erosion is variable. In many places the texture of the surface layer is sandy loam or light sandy clay loam.

The content of organic matter is low. Surface runoff is medium, permeability and the rate of infiltration are moderate, and the available moisture capacity is moderate.

This soil is probably best suited to perennial vegetation. Nearly all of it is wooded. (Capability unit VIe–2; woodland group 9; wildlife group 10.)

Davidson Series

The Davidson series consists of well-drained, strongly acid soils that have a dark reddish-brown surface layer and a subsoil of dark-red clay. The soils developed in residuum from diorite, hornblende, and granodiorite. They are on broad stream divides and in smoothly sloping areas. Most of the slopes are between 2 and 10 percent, but in a few places they are as steep as 25 percent.

The Davidson soils occur with the Lloyd and Cecil soils, but they are darker throughout than those soils. The slope breaks near the Davidson soils are commonly occupied by the Musella soils, which have a thinner subsoil than the Davidson soils.

Large areas of the Davidson soils are near Greenville and south of Gay. Much of the acreage has been cleared and cropped, and many areas are still used for peaches, pimento peppers, corn, cotton, small grains, or pasture. The native vegetation was oak and hickory.

Davidson loam, 2 to 6 percent slopes, eroded (DgB2).—This deep, well-drained soil of the uplands has a dark-red, clayey subsoil. The following are the major horizons:

0 to 6 inches, dark reddish-brown, very friable loam.
6 to 44 inches, dark-red, firm clay; blocky structure.
44 to 60 inches, dark-red, friable to firm silty clay; blocky structure.
60 to 72 inches +, dark-red to yellowish-brown silty clay loam to sandy clay loam from weathered basic rocks.

In some places the surface layer is near the dividing line between loam and clay loam. The subsoil is generally clay, but it ranges to clay loam. Soil tilth is good, and the response to fertilizer is medium. The content of organic matter is low, and the supply of available plant nutrients is moderate. Surface runoff is slow, permeability and the rate of infiltration are moderate, and the available moisture capacity is moderate to high.

This soil is well suited to pasture and to alfalfa, wheat, peaches, and most of the other locally grown crops. It can be cultivated intensively, but there is a slight to moderate hazard of further erosion. Most of the acreage has been cultivated. About 50 percent of it is still used for cultivated crops, 10 percent is pastured, and most of the rest is wooded. (Capability unit IIe–1; woodland group 5; wildlife group 1.)

Davidson loam, 6 to 10 percent slopes, eroded (DgC2).—The surface layer of this soil is more variable than that of Davidson loam, 2 to 6 percent slopes, eroded, and the solum is 6 to 10 inches thinner. There are a few shallow gullies and a few severely eroded spots. Surface runoff is medium.

This soil is suited to pasture and to peaches, alfalfa, wheat, and most of the other crops commonly grown in this county. The good tilth, favorable drainage, moderate supply of available plant nutrients, and moderate to high available moisture capacity make it suitable for cultivation. The slopes and medium surface runoff are such that further erosion is a moderate to severe hazard. Most of the acreage has been cleared and cultivated. About half of it is now wooded. (Capability unit IIIe–1; woodland group 5; wildlife group 1.)

Davidson loam, 15 to 25 percent slopes, eroded (DgE2).—In this soil the depth of soil material over weathered rock is only about 40 inches. Surface runoff is rapid. These factors, together with the steeper slopes, distinguish this soil from Davidson loam, 2 to 6 percent slopes, eroded. The steep slopes and rapid surface runoff create a very severe hazard of further erosion if this soil is cultivated.

This soil is probably best suited to perennial vegetation, such as pasture or trees. Practically all of the acreage is wooded. (Capability unit VIe–2; woodland group 5; wildlife group 2.)

Davidson clay loam, 2 to 6 percent slopes, severely eroded (DhB3).—The surface layer of this soil is dark-red to dark reddish-brown clay loam, and it is 4 to 6 inches thick. There are many shallow gullies. The rate of infiltration is slow, surface runoff is medium, and soil tilth is poor. The range of moisture content under which this soil can be worked is narrow.

This soil is suited to a number of different crops, but a good stand is difficult to establish because a crust forms rapidly on its surface.

This soil has all been cultivated, but the poor tilth, slow rate of infiltration, and medium surface runoff make it better suited to pasture or hay than to tilled crops. The hazard of further erosion is moderate to severe if cultivated crops are grown. (Capability unit IIIe–1; woodland group 7; wildlife group 3.)

Davidson clay loam, 6 to 10 percent slopes, severely eroded (DhC3).—The surface layer of this soil is dark-red to dark reddish-brown clay loam, and it is 4 to 6 inches thick. The thickness of the soil material over weathered rock is generally between 40 and 45 inches.

The rate of infiltration is slow, soil tilth is generally poor, and surface runoff is rapid. In some places shallow gullies are common, and in a few places the gullies are 3 to 5 feet deep. The range of moisture content under which this soil can be worked is narrow. The poor tilth, rapid runoff, and steepness of slope cause a very severe hazard of further erosion.

This soil is probably best suited to perennial vegetation. Nearly all of the acreage has been cultivated, but about three-fourths of it is now wooded. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Davidson clay loam, 10 to 15 percent slopes, severely eroded (DhD3).—The surface layer of this soil is dark-red to dark reddish-brown clay loam, and it is 3 to 5 inches thick. The soil material over weathered rock is 36 to 40 inches thick. A few areas are cobbly or stony. Shallow gullies are common, and there is an occasional deep one.

Surface runoff is rapid, and the rate of infiltration is slow. Soil tilth is poor, and the range of moisture conditions under which this soil can be worked is narrow. These factors, together with the strong slopes, make further erosion a very severe hazard.

This soil is probably best suited to perennial vegetation. Most of the acreage has been cultivated, but it is now wooded. (Capability unit IVe–1; woodland group 7; wildlife group 4.)

Gullied Land (Gul)

This miscellaneous land type consists of small areas where erosion has exposed partly weathered parent material. Gullies, deep and shallow, make up more than half of the land surface. In many places these gullies have cut into the weathered mica schist, granite, hornblende, diorite, or gneiss. The soil material between the gullies is sandy clay loam to clay, and it is mainly from the lower part of the B horizon of the original soil profile. The slopes are generally between 6 and 15 percent, but in a few places they are as steep as 25 percent.

The content of organic matter and the supply of available plant nutrients are low in Gullied land. Tilth is poor, and plants make extremely slow growth. Surface runoff is very rapid. Permeability is slow, and the rate of infiltration and the available moisture capacity are low.

This miscellaneous land type is not suitable for agriculture. It can be managed, however, so that it will afford watershed protection and will produce a small amount of food and cover for wildlife. Establishing vegetation requires great care and skill. Most of the acreage is idle. (Capability unit VIIe–4; wildlife group 4.)

Habersham Series

The Habersham series consists of well-drained, strongly acid soils that have a gravelly surface layer and a subsoil of red clay loam. These soils developed in residuum from sandstone, quartzite, and schist. They are on the broad ridges and smooth slopes of Pine Mountain. Their slope ranges from 2 to 15 percent.

The Habersham soils on the broad ridgetops are adjacent to areas of Cobbly and gravelly land, steep. Just below the top of Pine Mountain, they are near the Braddock and Thurmont soils. The Habersham soils are less cobbly and less stony than Cobbly and gravelly land, steep. In contrast to that land type, which contains little clay, they have a thick subsoil of red clay loam. The Habersham soils have a redder subsoil than the Thurmont soils. They developed in residuum; the Thurmont and Braddock soils developed in old local alluvium.

The Habersham soils are in medium-sized areas near the southern border of the county. They occupy only a small acreage. The native vegetation was oak, hickory, longleaf pine, and shortleaf pine. Most of the acreage has been cleared and cropped to corn, peaches, cotton, small grains, and hay.

Habersham gravelly loamy sand, 2 to 6 percent slopes (HDB).—This well-drained soil has a surface layer of gravelly loamy sand and a subsoil of red clay loam. The following are the major horizons:

0 to 11 inches, yellowish-brown to reddish-yellow gravelly loamy sand.
11 to 34 inches, red, friable clay loam; blocky structure; few mica flakes.
34 to 40 inches +, highly weathered, red sandstone that breaks down easily to sandy loam.

The color of the surface layer ranges from yellowish brown or reddish yellow to grayish brown. There are a few places where the surface layer contains only a few pebbles.

Included in the mapped areas of this soil are a few areas that have a surface layer of loamy coarse sand, as well as a few areas that have a surface layer of coarse sandy loam. In some of these areas, the texture of the subsoil ranges to clay. Also included are a few eroded areas, where the subsoil is 6 to 8 inches below the surface and the surface layer is sandy loam.

Habersham gravelly loamy sand, 2 to 6 percent slopes, has good tilth, but there are enough pebbles to cause slight difficulty in tillage. Crops grown on this soil respond well to fertilizer. The content of organic matter is moderate to low, and the supply of available plant nutrients is low. Surface runoff is slow, permeability is moderate, and the rate of infiltration is rapid. The available moisture capacity is moderate to high.

This soil is suited to a number of different crops, and it can be cultivated intensively. There is, however, a slight to moderate hazard of erosion. About half of the acreage is cultivated. (Capability unit IIe–2; woodland group 1; wildlife group 1.)

Habersham gravelly loamy sand, 6 to 10 percent slopes (HDC).—The steeper slopes and medium surface runoff distinguish this soil from Habersham gravelly loamy sand, 2 to 6 percent slopes.

Included in the mapped areas of this soil are a few eroded areas. In these areas the surface layer is brown to reddish-yellow loamy sand that is 5 to 8 inches thick. The subsoil is red clay loam. There are a few shallow, V-shaped gullies.

Habersham gravelly loamy sand, 6 to 10 percent slopes, has good soil tilth, but there are enough pebbles to cause slight difficulty in tillage. Crops grown on this soil respond well to fertilizer.

This soil is suited to most locally grown crops. The deep rooting zone, favorable drainage, and good tilth make it suitable for cultivated crops, but the strong slopes and medium surface runoff make the hazard of erosion moderate to severe. More than half of the acreage is wooded. (Capability unit IIIe–2; woodland group 1; wildlife group 1.)

Habersham gravelly loamy sand, 10 to 15 percent slopes (HDD).—This soil is steeper than Habersham gravelly loamy sand, 2 to 6 percent slopes. Also, the soil material over weathered rock is about 6 inches thinner. Surface runoff is medium.

Included in the mapped areas of this soil are a few areas of an eroded soil. The included soil has a surface layer of yellowish-red sandy loam that is 5 to 8 inches thick and a subsoil of red clay loam. There are a few shallow, V-shaped gullies.

Habersham gravelly loamy sand, 10 to 15 percent slopes, is probably best suited to perennial vegetation. About 80 percent of the acreage is wooded. (Capability unit IVe–1; woodland group 1; wildlife group 2.)

Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded (HCC3).—The surface layer of this soil is yellowish-red to red sandy clay loam, 4 to 6 inches thick. About 10 to 15 percent of the surface is covered by gravel. The thickness of the soil material over weathered rock is commonly 18 to 24 inches. In much of the acreage, 12 to 18 inches of soil material has been removed mechanically.

Included in the mapped areas of this soil are a few areas of a soil that has slopes of 2 to 6 percent. In the included soil, from 15 to 20 inches of soil material has been removed mechanically.

Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded, has fair soil tilth. The content of organic matter and the supply of available plant nutrients are low. Crops grown on this soil respond well to fertilizer. Surface runoff is medium, permeability and the rate of infiltration are moderate, and the available moisture capacity is low. The hazard of further erosion is severe.

This soil is probably best suited to perennial vegetation. It has been cultivated, but now all of the acreage is either wooded or idle. (Capability unit IVe–1; woodland group 2; wildlife group 3.)

Iredell Series

The Iredell series consists of moderately well drained, very slowly permeable, gently sloping soils. The subsoil is very heavy, plastic clay and is less than 10 inches from the surface. These soils developed in residuum from diorite, hornblende gneiss, and other basic rocks. Their surface layer is yellowish-brown sandy loam, and their subsoil is mottled olive-yellow and light-brown clay. These soils are low in natural fertility, and they contain little organic matter. They are strongly acid.

The Iredell soils occur with the Lloyd soils in gently sloping areas. They are thinner and less friable than those soils, and their B horizon is less red.

The Iredell soils occupy a small acreage in the northeastern corner of the county. The native vegetation was oak, hickory, and a few pines. The shallow root zone over dense, plastic clay limits the suitability of these soils for crops. Most of the acreage has been cleared, and it is used for cotton or for pastures of sericea lespedeza or tall fescue.

Iredell sandy loam, 2 to 6 percent slopes, eroded (IbB2).—This is the only Iredell soil mapped in the county. It is a moderately well drained soil of the uplands and has a subsoil of dense, plastic clay. The following are the major horizons:

0 to 6 inches, dark yellowish-brown, very friable sandy loam.
6 to 9 inches, light olive-brown, very friable sandy loam; weak, blocky structure.
9 to 20 inches, olive-yellow, extremely firm clay mottled with light brown and black; strong, blocky and prismatic structure.
20 to 36 inches +, mottled gray, olive, and brown sandy clay loam to clay.

The color of the surface layer ranges from grayish brown to dark yellowish brown. In places where the surface layer is thin, cracks as much as 1 inch wide occur.

The soil tilth and response of crops to fertilizer are fair. The content of organic matter and the supply of available plant nutrients are low. Surface runoff is medium, the rate of infiltration is moderate, and the permeability of the subsoil is very slow. The available moisture capacity is moderate.

This soil is suited to a limited number of pasture or field crops, but further erosion is a slight to moderate hazard. Yields are commonly low to moderate. Most of the acreage has been cleared and is used for pasture or hay. (Capability unit IIe–3; woodland group 10.)

Lloyd Series

The Lloyd series consists of strongly acid, well-drained soils that have a friable, red to dark-red, clayey subsoil. The Lloyd soils developed in residuum from mixed acid and basic rocks, such as diorite, hornblende, gneiss, and schist. The slopes range from 2 to 25 percent, but in only slightly more than 2 percent of the acreage are they steeper than 15 percent.

These soils are on broad stream divides and on smooth slopes with the Davidson, Cecil, Madison, and Appling soils. They also commonly occur near the Musella soils, which are on the slope breaks. The Lloyd soils have a more sandy surface layer than the Davidson soils, and their subsoil is generally red instead of dark red. They have a darker surface layer than the Cecil and Madison soils, and they lack the abundant mica that is characteristic of the Madison soils. Also, the Lloyd soils are much redder throughout than the Appling soils. Their solum is thicker than that of the Musella soils.

The Lloyd soils occur in medium to large areas around Greenville, north of Woodbury, and northwest of Gay. They are less extensive in other parts of the county. The native vegetation was oak, hickory, poplar, and pine. Most areas have been cleared, and much of the acreage is used for cotton, corn, small grains, peaches, pimento peppers, pasture, and pine trees.

Lloyd sandy loam, 2 to 6 percent slopes, eroded (LdB2).—This deep, well-drained soil of the uplands has a red to dark-red, clayey subsoil. The following are the major horizons:

0 to 5 inches, dark reddish-brown, very friable sandy loam.
5 to 10 inches, dark-red, friable sandy clay loam; blocky structure.
10 to 29 inches, red, friable clay; blocky structure.
29 to 44 inches, red, friable clay loam with reddish-yellow mottles; blocky structure.
44 to 50 inches +, red silty clay loam to loam.

The surface layer is brown in a few places. The subsoil ranges from clay to clay loam in texture and from red to dark red in color. Erosion is variable in this soil. In a few places the plow layer is wholly within the original surface layer, but in many places a little of the subsoil is turned up each time the soil is plowed. Included in the mapped areas of this soil are a few areas of a soil that has a surface layer of yellowish-brown sandy loam and a subsoil of red, firm clay.

Lloyd sandy loam, 2 to 6 percent slopes, eroded, has good soil tilth. Crops grown on it respond well to fertilizer. The content of organic matter is low. Surface runoff is slow, and permeability and the rate of infiltration are moderate. The available moisture capacity is moderately high.

This soil is suited to most crops commonly grown in this county, including peaches, wheat, alfalfa, and pasture. It can be cultivated intensively, and there is only a slight to moderate hazard of further erosion. Yields are generally moderate to high.

Nearly all of the acreage has been cultivated. About 50 percent is now used for cultivated crops, 10 percent is pastured, and most of the rest is wooded. (Capability unit IIe–1; woodland group 5; wildlife group 1.)

Lloyd sandy loam, 6 to 10 percent slopes, eroded (LdC2).—The steeper slopes and slightly more rapid runoff distinguish this soil from Lloyd sandy loam, 2 to 6 percent slopes, eroded. Included in the mapped areas are a few small areas of a severely eroded soil that has a surface layer of dark reddish-brown to dark-red clay loam.

Lloyd sandy loam, 6 to 10 percent slopes, eroded, is suited to most of the crops commonly grown in this county, including wheat, alfalfa, peaches, pimento peppers, and pasture. The hazard of further erosion is moderate to severe, however, if the soil is used for cultivated crops. Yields are moderate to high. Most of the acreage has been cultivated, but about 60 percent of it is now wooded. (Capability unit IIIe–1; woodland group 5; wildlife group 1.)

Lloyd sandy loam, 10 to 15 percent slopes, eroded (LdD2).—This soil is steeper than Lloyd sandy loam, 2 to 6 percent slopes, eroded. Also, its solum is 6 to 10 inches thinner, and surface runoff is more rapid. A few areas are cobbly and gravelly. Included in the mapped areas of this soil are a few small areas of a severely eroded soil that has a surface layer of dark reddish-brown to dark-red clay loam.

The strong slopes and more rapid runoff make the hazard of further erosion severe if Lloyd sandy loam, 10 to 15 percent slopes, eroded, is cultivated. This soil is probably best suited to perennial vegetation. Most of the acreage has been cultivated, but about 70 percent of it is now wooded. (Capability unit IVe–1; woodland group 5; wildlife group 2.)

Lloyd clay loam, 2 to 6 percent slopes, severely eroded (LeB3).—This soil has a surface layer of red to dark reddish-brown clay loam that is 4 to 6 inches thick. The surface layer directly overlies red clay. In a few places the surface layer is brown or dark-brown heavy sandy loam. There are many shallow gullies, and a few gullies are 3 to 5 feet deep.

This soil has only fair soil tilth, and the range of moisture conditions favorable for tillage is narrow. Crops make fair response to fertilizer. Surface runoff is medium, and the rate of infiltration is slow. The available moisture capacity is moderate to high.

This soil is suited to most of the crops commonly grown in this county, including wheat, alfalfa, peaches, and pimento peppers. It is often difficult to obtain a good stand, however, because the soil crusts over easily. Moderate to high yields may be expected, but the hazard of further erosion is moderate to severe. Nearly all of the acreage has been cleared, but more than half of it has been reforested. (Capability unit IIIe–1; woodland group 7; wildlife group 3.)

Lloyd clay loam, 6 to 10 percent slopes, severely eroded (LeC3).—The finer textured surface layer, steeper slopes, and more rapid runoff distinguish this soil from Lloyd sandy loam, 2 to 6 percent slopes, eroded. The surface layer is red to dark reddish-brown clay loam, and it is 4 to 5 inches thick. The clay loam grades abruptly to red clay. In a few places about 10 percent of the surface is covered with gravel. There are shallow gullies in many places, and a few gullies that are 3 to 5 feet deep. The solum is generally 28 to 32 inches thick.

This soil has only fair tilth, and the range of moisture conditions favorable for tillage is narrow. The crops make fair response to fertilizer, but it is often difficult to obtain a good stand because this soil crusts over easily. Surface runoff is medium, and the rate of infiltration is slow. The available moisture capacity is moderate. The fair tilth, strong slope, and medium surface runoff make the hazard of further erosion severe to very severe.

This soil is probably best suited to perennial vegetation. Most of the acreage has been cultivated, but about 75 percent of it is now in trees. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Lloyd clay loam, 10 to 15 percent slopes, severely eroded (LeD3).—The surface layer of this soil is red to dark reddish-brown clay loam, and it is 4 to 5 inches thick. The clay loam grades abruptly to red clay. Weathered rock is commonly at a depth of 26 to 30 inches. In a few places 10 to 15 percent of the surface is covered with gravel. There are many shallow gullies, and a few gullies that are 3 to 5 feet deep.

Soil tilth is poor. Surface runoff is rapid. Both the rate of infiltration and the available moisture capacity are moderate. The hazard of further erosion is very severe.

The strong slopes, poor tilth, and rapid surface runoff make this soil probably best suited to perennial vegetation. Most of the acreage has been cultivated, but more than 70 percent of it is now wooded. (Capability unit IVe–1; woodland group 7; wildlife group 4.)

Lloyd clay loam, 15 to 25 percent slopes, severely eroded (LeE3).—The surface layer of this soil is red to dark reddish-brown clay loam, and it is 4 to 5 inches thick. It overlies red clay. The thickness of the soil material over weathered rock is commonly 22 to 28 inches. There are a few shallow gullies and an occasional gully that is 3 to 5 feet deep.

Soil tilth is poor, surface runoff is rapid, and the rate of infiltration is moderate. The available moisture capacity is low. These factors, together with the steep slopes, make this soil subject to a very severe hazard of further erosion.

This soil is probably best suited to trees or other perennial vegetation. Nearly all of the acreage is wooded. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Lloyd-Gullied land complex, 6 to 10 percent slopes (LeC4).—The surface layer of the Lloyd soil in this complex ranges from red or dark-red clay loam to clay that is 3 to 4 inches thick. The material in the subsoil is similar to that in the surface layer. The thickness of the solum over weathered rock is commonly 20 to 26 inches. There are many shallow, V-shaped gullies, and some of them penetrate to the weathered rock.

Surface runoff is rapid, tilth is poor, and the rate of infiltration is slow. The hazard of further erosion is very severe.

This complex is best suited to trees or kudzu. Most of the acreage has been cultivated, but it is now either idle or in trees. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Lloyd-Gullied land complex, 10 to 15 percent slopes (LeD4).—The surface layer of the Lloyd soil in this complex is red or dark-red clay, and it is 3 to 4 inches thick. The material in the subsoil is similar to that in the surface layer. The thickness of the solum over weathered rock is commonly 16 to 22 inches. There are many shallow, V-shaped gullies, and some gullies penetrate to the weathered rock. A few gullies are 3 to 5 feet deep.

Soil tilth is poor, the rate of infiltration is slow, and surface runoff is rapid. The hazard of erosion is very severe.

This complex is best suited to perennial vegetation, such as trees or kudzu. All of the acreage has been cleared and cultivated, but it is now idle or in trees. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Local Alluvial Land (Lcm)

This miscellaneous land type consists of deposits of sandy loam or of material of variable texture that has washed from nearby slopes. The deposits range in depth from 12 to 20 inches. They overlie Madison, Appling, Lloyd, or Colfax soils that have a slightly altered profile. In most places the material that has washed in is similar to that in the original surface layer of the underlying soil, and it is difficult to distinguish between the two materials. This land type is deep, well drained or moderately well drained, and strongly acid. It has slightly concave slopes, ranging from 0 to 2 percent.

The content of organic matter is low to medium, and the supply of available plant nutrients is medium. Tilth is good. Crops respond well to fertilizer, and yields are moderate to high. Runoff is slow, and permeability and the rate of infiltration are moderate. The available moisture capacity is high.

If an adequate supply of water is nearby, this soil is suited to sprinkler irrigation. It is suited to most of the crops grown locally, and it can be cultivated every year if

cover crops are grown occasionally to help maintain the content of organic matter and good soil tilth.

Local alluvial land occurs in small areas throughout the county. The original vegetation was oak, hickory, poplar, and pine. Nearly half of the acreage is cultivated, and most of the rest is wooded. (Capability unit I–1; woodland group 4; wildlife group 9.)

Louisa Series

The Louisa series consists of somewhat excessively drained, strongly acid soils that have a coarse-textured surface layer and little or no B horizon. These soils developed in residuum, largely from mica schist. They are commonly on narrow ridges or in steep areas. In most places the slopes are between 15 and 25 percent, but in some places they are between 6 and 15 percent.

The Louisa soils occur with the steep Louisburg soils, but they have a higher content of mica schist throughout than those soils. The Louisa soils are also on breaks or steep slopes adjacent to the Madison soils, but, unlike those soils, they have only a slightly developed or no B horizon.

The Louisa soils occupy only a small acreage and are in small areas throughout the county. The native vegetation was oak, hickory, and pine. Most of the acreage where the slopes are between 6 and 15 percent has been cleared and cropped, but pine and sweetgum are now growing on much of it. A few areas are used for corn, cotton, pimento peppers, small grains, and pasture. Most of the areas where the slopes are between 15 and 25 percent have been heavily cut over. Scrub oak, sweetgum, hickory, and other low-value hardwoods are now growing on those areas.

Louisa coarse sandy loam, 6 to 10 percent slopes (LEC).—This shallow soil overlies weathered mica schist. The following are the major horizons:

0 to 10 inches, brown coarse sandy loam that contains much mica.
10 to 36 inches +, red, highly weathered mica schist that can be broken down easily to sandy clay loam or to loamy coarse sand.

In most places the color of the surface layer is grayish brown to brown, but in a few places it ranges to reddish yellow. The surface layer is chiefly coarse sandy loam, but in places it is sandy loam, loamy sand, or loamy coarse sand. In some profiles there is a layer of red clay loam, 4 to 10 inches thick, just beneath the surface layer. The color of the weathered rock is variable, and in many places it is grayish brown to brown. The parent rock is commonly highly weathered and soft to a depth of many feet.

Soil tilth is good, and crops grown on this soil respond well to fertilizer. Yields are low to moderate. The content of organic matter and the supply of available plant nutrients are low. Surface runoff is moderate, permeability and the rate of infiltration are rapid, and the available moisture capacity is low. The hazard of erosion is severe.

This soil is probably best suited to perennial vegetation. Most of the acreage is wooded. (Capability unit IVe–4; woodland group 8; wildlife group 7.)

Louisa coarse sandy loam, 10 to 15 percent slopes (LED).—This soil is steeper and has more rapid runoff than Louisa coarse sandy loam, 6 to 10 percent slopes. In a few places there is a thin layer of red, friable sandy clay loam mixed with weathered mica schist just below the surface layer. A few areas are gravelly and cobbly, and some areas have weathered mica schist at the surface. The hazard of erosion is very severe.

The strong slopes, low fertility, and severe hazard of erosion make this soil better suited to perennial vegetation than to cultivated crops. Most of the acreage is in trees. (Capability unit VIe–3; woodland group 8; wildlife group 8.)

Louisa coarse sandy loam, 15 to 25 percent slopes (LEE).—This soil is steeper and has more rapid runoff than Louisa coarse sandy loam, 6 to 10 percent slopes.

In a few places a soil that has slopes of 25 to 40 percent is included in the areas mapped. Some areas are gravelly and cobbly, and there are a few rock outcrops.

The steep slopes, very severe hazard of erosion, shallow root zone, and low fertility make Louisa coarse sandy loam, 15 to 25 percent slopes, better suited to perennial vegetation than to cultivated crops. Nearly all of the acreage is wooded. (Capability unit VIIe–2; woodland group 8; wildlife group 8.)

Louisburg Series

The Louisburg series consists of somewhat excessively drained, strongly acid soils that have a coarse-textured surface layer over weathered rock. These soils developed mainly in residuum from granite and gneiss, but partly in residuum from sandstone and quartzite. They are on broken ridges and slopes. The slopes range from 2 to 25 percent, but in about three-fourths of the acreage the slopes are less than 15 percent.

The Louisburg soils occur with the Appling, Cecil, and Louisa soils. They are coarser textured than the Appling and Cecil soils, and they have a thinner solum and a less distinct subsoil. The Louisberg soils have less mica throughout than the Louisa soils, but their parent material contains more granite.

The Louisburg soils occupy about 5 percent of the county. They are in moderately large areas east of Greenville along the Woodbury road, and in moderate to small areas in other parts of the county.

The native vegetation was oak, hickory, and a few pines. Most areas have been cleared or heavily cut over. Some areas are now used for grain sorghum, cotton, corn, pasture, and small grains.

Louisburg loamy coarse sand, 2 to 6 percent slopes (LCB).—This is a shallow, coarse-textured soil that overlies granite. The following are the major horizons:

0 to 6 inches, grayish-brown to dark grayish-brown loamy coarse sand.
6 to 32 inches, yellowish-brown to yellowish-red, highly weathered granitic rock ranging from loamy coarse sand to sandy loam.
32 inches +, unweathered granite.

The color of the plow layer ranges from light gray to brown or dark grayish brown. In a few places the texture of this layer is coarse sand. In places there is a yellowish-brown to red layer of sandy clay loam, 8 to 10 inches thick, just beneath the surface layer. The color of the underlying weathered rock ranges from pale brown to yellowish red, and gray or black streaks are common. In many places bedrock is at a depth of 6 to 20 inches. There are a few rock outcrops and loose stones.

Soil tilth is good, except where there are a few stones and rock outcrops. Crops grown on this soil make fair response to fertilizer. The content of organic matter and the supply of available plant nutrients are low. Surface runoff is slow, permeability and the rate of infiltration are rapid, and the available moisture capacity is low.

This soil is moderately well suited to a limited number of crops, and yields are low to moderate. About half of the acreage is wooded, and the rest is about equally divided among cultivated crops, pasture, and idle areas. (Capability unit IIIe–5; woodland group 8; wildlife group 7.)

Louisburg loamy coarse sand, 6 to 10 percent slopes (LCC).—This soil is steeper than Louisburg loamy coarse sand, 2 to 6 percent slopes, and it has medium surface runoff. There are also a few more stones and rock outcrops. Because of the moderate slopes and medium runoff, erosion is a moderate to severe hazard.

This soil is suited to only a limited number of crops. Because of the shallow rooting zone, low fertility, low available moisture capacity, and hazard of erosion, it is better suited to perennial vegetation than to cultivated crops. About 75 percent of the acreage is in forest, and the rest is about equally divided among cultivated crops, pasture, and idle areas. (Capability unit IVe–4; woodland group 8; wildlife group 7.)

Louisburg loamy coarse sand, 10 to 15 percent slopes (LCD).—This soil is steeper than Louisburg loamy coarse sand, 2 to 6 percent slopes, and there are a few more stones and rock outcrops. Surface runoff is medium, and the hazard of erosion is severe. These factors, together with the shallow rooting zone and the low fertility, make this soil better suited to perennial vegetation than to cultivated crops. About 80 percent of the acreage is wooded. The rest is mainly idle or in pasture. (Capability unit VIe–3; woodland group 8; wildlife group 8.)

Louisburg stony loamy coarse sand, 6 to 10 percent slopes (LDC).—This soil has more stones on the surface and throughout the profile than Louisburg loamy coarse sand, 2 to 6 percent slopes, and there are more rock outcrops. It is also steeper. The rooting zone is shallow and fertility is low.

This soil is too stony to be used for cultivated crops, but it can be used for pasture or trees. Nearly all of the acreage is in forest. (Capability unit VIs–1; woodland group 8; wildlife group 8.)

Louisburg stony loamy coarse sand, 10 to 15 percent slopes (LDD).—Numerous rock outcrops and stones, steeper slopes, and medium surface runoff distinguish this soil from Louisburg loamy coarse sand, 2 to 6 percent slopes. In only a few areas is there a layer as fine textured as sandy clay loam.

The many stones, strong slopes, low fertility, and low available moisture capacity make this soil better suited to trees than to field crops or pasture. Nearly all of the acreage is wooded. (Capability unit VIIe–2; woodland group 8; wildlife group 8.)

Louisburg stony loamy coarse sand, 15 to 25 percent slopes (LDE).—This soil is steeper than Louisburg loamy coarse sand, 2 to 6 percent slopes, and there are more rock outcrops and stones. Surface runoff is medium. The rooting zone is shallow.

The stones and steep slopes make this soil suitable only for trees. All of it is wooded. (Capability unit VIIe–2; woodland group 8; wildlife group 8.)

Madison Series

The Madison series consists of well-drained, strongly acid soils that have a subsoil of red clay loam. These soils developed in residuum from mica schist, and they are highly micaceous throughout. They are on broad stream divides and on smooth slopes that range from 2 to 25 percent. In about two-thirds of the acreage, the slope is between 2 and 10 percent.

The Madison soils occur with the Cecil and Appling soils, but they are more micaceous than those soils. They have a redder subsoil than the Appling soils and a more friable subsoil than the Cecil soils. The narrow crests, slope breaks, and steep areas near the Madison soils are commonly occupied by Louisa soils. The solum of the Louisa soils is much thinner than the solum of the Madison soils. The B horizon is only slightly developed or is absent.

The Madison soils are in large areas throughout the county, and they are the predominant soils in the northwestern quarter. They occupy about 22 percent of the acreage. The native vegetation was oak, hickory, pine, and poplar. Most of the areas that have slopes of between 2 and 15 percent have been cleared and cropped, and many of them are still used for most of the crops grown locally. Some areas have been reforested, primarily with loblolly pine. Most of the slopes that are between 15 and 25 percent are forested to pine, sweetgum, oak, and hickory.

Madison sandy loam, 2 to 6 percent slopes, eroded (MgB2).—This deep, well-drained soil of the uplands has a red, micaceous subsoil of clay loam. The following are the major horizons:

0 to 6 inches, brown sandy loam containing much mica and fragments of mica schist.
6 to 9 inches, yellowish-red sandy clay loam containing much mica.
9 to 38 inches, red clay loam containing enough mica to make it slick and shiny; friable; blocky structure.
38 to 48 inches +, highly weathered mica schist, easily broken down to sandy clay loam or to loamy sand.

The texture of the surface layer is near the dividing line between sandy loam and loamy sand. In some places the sand fraction is coarse, but in a few places it is fine. In many places some material from the subsoil has been mixed with that in the surface layer, and the present surface layer is reddish yellow or yellowish red. In those places the surface layer rests directly on red clay loam.

Included in the mapped areas of this soil are a few areas that have a subsoil of red, firm clay. The uppermost 18 to 24 inches of the included soil is practically free of mica. Also included are several cobbly areas and a few areas of a soil that shows little or no erosion. The latter soil has a surface layer of sandy loam that is 10 to 14 inches thick. The surface layer overlies a layer of yellowish-red sandy clay loam that is transitional to the subsoil of clay loam.

Madison sandy loam, 2 to 6 percent slopes, eroded, has good soil tilth, and crops grown on it respond well to fertilizer. The content of organic matter is low, and the natural fertility is moderate. Surface runoff is slow,

permeability is moderate, and the rate of infiltration is rapid. The available moisture capacity is moderately high.

This soil is suited to a wide range of locally grown crops, and yields are generally moderate to high. The soil can be cultivated intensively, but there is a slight to moderate hazard of further erosion. Nearly all of the acreage has been cultivated, and more than half of it is still used for cultivated crops. (Capabiilty unit IIe–1; woodland group 5; wildlife group 1.)

Madison sandy loam, 6 to 10 percent slopes, eroded (MgC2).—This soil is steeper and has a more variable plow layer than Madison sandy loam, 2 to 6 percent slopes, eroded. There are a few galled spots and shallow gullies. A few areas are gravelly and cobbly, and some show little or no erosion. Included with this soil in mapping are a few areas of a soil that has a subsoil of red, firm clay.

The moderate slope of Madison sandy loam, 6 to 10 percent slopes, eroded, and the medium surface runoff make the hazard of further erosion moderate to severe when this soil is used for cultivated crops. This soil is suited to a number of different crops (fig. 5). Under good management moderate to high yields are obtained.

Figure 5.—**Peach orchard on Madison sandy loam, 6 to 10 percent slopes, eroded.**

Most of the acreage has been cultivated. About 60 percent of it is in forest, and most of the rest is used for cultivated crops or pasture. (Capability unit IIIe–1; woodland group 5; wildlife group 1.)

Madison sandy loam, 10 to 15 percent slopes, eroded (MgD2).—The surface layer of this soil is 4 to 6 inches thick. It is more variable in both color and texture than the surface layer of Madison sandy loam, 2 to 6 percent slopes, eroded. The thickness of the soil material over weathered rock is about 30 inches. A few areas are gravelly and cobbly, and there are a few galled spots and shallow gullies. Surface runoff is medium.

The steepness of the slope and the susceptibility to further erosion make this soil better suited to perennial vegetation than to cultivated crops. If this soil is cultivated, a rotation should be used in which close-growing crops are grown much of the time. Most of the acreage has been cultivated, but about 80 percent of it is now forested. (Capability unit IVe–1; woodland group 5; wildlife group 2.)

Madison sandy loam, 15 to 25 percent slopes, eroded (MgE2).—The surface layer of this soil is 4 to 6 inches thick, and the soil material is commonly 22 to 28 inches deep over weathered rock. A few spots are severely eroded. There are a few shallow gullies and an occasional U-shaped gully that is 2 to 5 feet deep.

The available moisture capacity is moderate. Surface runoff is rapid if the soil is not protected by a cover of plants. The steepness of the slope and the severe hazard of further erosion make this soil better suited to perennial vegetation than to cultivated crops. A small part of the acreage has been cultivated, but nearly all of it is now wooded. (Capability unit VIe–2; woodland group 5; wildlife group 2.)

Madison sandy clay loam, 2 to 6 percent slopes, severely eroded (MlB3).—In most places this soil has a surface layer of red sandy clay loam. The surface layer rests directly on a layer of red clay loam. The thickness of the soil material over weathered rock is about 32 inches. There are many galled spots and shallow gullies and a few areas are cobbly and gravelly.

The tilth is only fair, but crops grown on this soil make good response to fertilizer. Surface runoff is medium, and the rate of infiltration and the available moisture capacity are moderate.

This soil is suited to most locally grown crops, but it is difficult to obtain a satisfactory stand unless moisture conditions are nearly ideal. Further erosion is a moderate to severe hazard. Nearly all of the acreage has been cultivated, but more than half of it is now forested. (Capability unit IIIe–1; woodland group 7; wildlife group 3.)

Madison sandy clay loam, 6 to 10 percent slopes, severely eroded (MlC3).—The plow layer of this soil consists of red sandy clay loam that is 4 to 6 inches thick. Depth of the soil material over weathered rock is commonly 24 to 28 inches. There are many galled spots and shallow gullies and an occasional U-shaped gully that is 3 to 5 feet deep. A few areas are gravelly and cobbly.

Soil tilth is fair. The soil has medium surface runoff and a moderate rate of infiltration.

Although this soil is suited to most locally grown crops, the severe hazard of further erosion makes it better suited to perennial vegetation than to cultivated crops. Nearly all of the acreage has been cultivated. About two-thirds of it is now wooded, and the rest is pastured or cultivated. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Madison sandy clay loam, 10 to 15 percent slopes, severely eroded (MlD3).—The surface layer of this soil is yellowish-red to red sandy clay loam, and it is 4 to 6 inches thick. The thickness of the soil material over weathered rock is commonly 22 to 26 inches. There are many galled spots and shallow gullies and a few U-shaped gullies that are 3 to 5 feet deep.

This soil has fair tilth. Surface runoff is rapid. The rate of infiltration and the available moisture capacity are moderate. The strong slopes and rapid runoff make further erosion a very severe hazard.

This soil is probably best suited to perennial vegetation. Most of the acreage has been cultivated, but nearly all of it is now in pine trees. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Madison sandy clay loam, 15 to 25 percent slopes, severely eroded (MlE3).—The surface layer of this soil is

red sandy clay loam that is 4 to 5 inches thick. The thickness of the soil material over weathered rock is commonly 20 to 24 inches.

Included in the mapped areas of this soil are a few areas of a soil that has a surface layer of reddish-yellow sandy loam. The surface layer of the included soil is 4 to 6 inches thick. There are many gullies, and some of them are 3 to 5 feet deep.

Soil tilth is fair in Madison sandy clay loam, 15 to 25 percent slopes, severely eroded. Surface runoff is rapid, the rate of infiltration is moderate, and the available moisture capacity is low. The hazard of further erosion is very severe.

This soil is best suited to trees. All of the acreage is wooded. (Capability unit VIIe–1; woodland group 7; wildlife group 4.)

Madison-Gullied land complex, 6 to 10 percent slopes (MlC4).—The surface layer of the Madison soil in this complex is highly micaceous, red clay loam, and it is 3 to 5 inches thick. The thickness of the soil material over weathered rock is 18 to 22 inches. There are many shallow gullies and a few U-shaped gullies that are 3 to 5 feet deep. In some places weathered rock is at the surface.

Soil tilth is poor. Surface runoff is rapid, and the rate of infiltration is slow. The available moisture capacity is low, and the hazard of further erosion is very severe. The soils in this complex are better suited to trees than to other uses. Nearly all of the acreage has been cultivated, but about 75 percent of it is now in pine trees. Most of the rest is idle. (Capability unit VIe–2; woodland group 7; wildlife group 4.)

Madison-Gullied land complex, 10 to 15 percent slopes (MlD4).—The surface layer of the Madison soil in this complex is highly micaceous, red clay loam, and it is 3 to 5 inches thick. It is composed of material primarily from the lower part of the subsoil. The thickness of the soil material over weathered rock is commonly 16 to 20 inches, but in a few places weathered mica schist is within 6 inches of the surface. There are many shallow, V-shaped gullies and a few U-shaped ones that are 3 to 5 feet deep.

Soil tilth is poor. Surface runoff is rapid, and the rate of infiltration is slow. The available moisture capacity is low. The hazard of further erosion is very severe.

The soils of this complex are better suited to trees than to other uses, but trees make only slow growth. All of the acreage is either idle or in pine trees. (Capability unit VIIe–1; woodland group 7; wildlife group 4.)

Musella Series

The Musella series consists of well-drained, very strongly acid soils that have a subsoil of reddish-brown to yellowish-red clay loam. These soils developed in residuum from diorite, hornblende, schist, and gneiss. They have slopes of 2 to 40 percent.

The Musella soils are on ridges or narrow stream divides, and on slope breaks in areas where Davidson and Lloyd soils are predominant. They have a thinner B horizon than the Davidson and Lloyd soils. The Musella soils are widely scattered, and they occupy less than 1 percent of the county. About one-fourth of the acreage is mapped in an undifferentiated unit with the Wilkes soils.

Musella clay loam, 2 to 10 percent slopes, severely eroded (MvC3).—This well-drained soil of the uplands has a surface layer of dark reddish-brown clay loam and a subsoil of dark-red clay loam. Shallow, V-shaped gullies are common. The following are the major horizons:

0 to 5 inches, dark reddish-brown clay loam.
5 to 16 inches, dark-red clay loam that contains fragments of weathered basic rock; blocky structure.
16 to 28 inches +, yellowish-red clay loam and partly weathered diorite.

A few areas are gravelly and cobbly, and there is an occasional loose stone. The subsoil ranges from dark-red to red clay loam to clay.

Soil tilth is poor. Crops grown on this soil make only fair response to fertilizer. Surface runoff is rapid, permeability is moderately slow, and the rate of infiltration is slow. The soil is low in available moisture capacity. The content of organic matter and the supply of available plant nutrients are low.

This soil is suited to a limited number of crops. The hazard of further erosion is severe if cultivated crops are grown, but a cultivated crop may be grown occasionally. The soil is probably best suited to perennial vegetation. Most of the acreage is wooded. (Capability unit IVe–2; woodland group 6; wildlife group 6.)

Musella clay loam, 10 to 15 percent slopes, eroded (MvD2).—This soil has a surface layer of yellowish-red clay loam that is 6 to 8 inches thick. There are few, if any, gullies.

Included in the areas mapped are several areas of a soil that has many stones on the surface and throughout the profile. This included soil has a subsoil of dark-red clay loam to clay that is 15 to 20 inches thick. Also included are a few areas of a soil that has a surface layer of sandy loam to sandy clay loam.

Runoff is rapid on Musella clay loam, 10 to 15 percent slopes, eroded, and the rate of infiltration is slow. As a result, there is a severe hazard of further erosion.

This soil is probably best suited to perennial vegetation. Most of the acreage is wooded. (Capability unit IVe–2; woodland group 6; wildlife group 6.)

Musella clay loam, 10 to 15 percent slopes, severely eroded (MvD3).—Surface runoff is more rapid on this soil than on Musella clay loam, 2 to 10 percent slopes, severely eroded. The thickness of the soil material over hard or weathered rock is commonly 16 to 20 inches. A few areas are cobbly and stony, and there are a few gullies.

Soil tilth is poor. The hazard of further erosion is very severe.

This soil is probably best suited to trees or to other perennial vegetation. Nearly all of the acreage is wooded, but a few acres are idle. (Capability unit VIe–4; woodland group 6; wildlife group 6.)

Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded (MEF2).—This undifferentiated unit consists of steep, well-drained to somewhat excessively drained soils in which the rooting zone is shallow over bedrock. In most places stones or cobbles cover 20 to 25 percent of the surface and make up 20 to 25 percent of the profile. There are a few boulders and rock outcrops. The Musella soils have a surface layer of dark reddish-brown clay loam that overlies a subsoil of dark-red clay loam. The Wilkes soils have a surface layer that is more sandy than that of the Musella soils, and their subsoil contains

a large amount of slightly to highly weathered rock.

Because the Musella and Wilkes soils are steep, stony, and shallow over bedrock, and because the soils of the two series occur in such an intricate pattern, these soils are mapped as an undifferentiated unit. The Musella soils make up about 75 percent of the acreage.

The Musella soils of this mapping unit have a profile similar to that of Musella clay loam, 2 to 10 percent slopes, severely eroded, but they have steeper slopes and there are more stones.

The Wilkes soils are somewhat excessively drained and strongly acid. They have a surface layer of stony loamy sand. Below the surface layer is dark yellowish-brown clay mixed with partly weathered rock.

A brief description of a Wilkes stony loamy sand follows:

0 to 4 inches, dark yellowish-brown stony loamy sand that contains about 20 to 25 percent, by volume, of stones and cobbles.
4 to 12 inches, dark yellowish-brown clay that contains about 50 percent weathered rock fragments; extremely firm; blocky and prismatic structure; hard stones or cobbles of hornblende, schist, quartzite, and granite make up about 25 percent of this layer.
12 to 36 inches, green, gray, and black, partly weathered hornblende schist and granite.
36 inches +, unweathered granite, hornblende, and diorite.

The surface layer ranges from dark yellowish brown to grayish brown in color, and from loamy sand to sandy loam in texture. In many places the surface layer directly overlies the layer of weathered rock. In a few places it directly overlies hard rock.

The soils of this mapping unit have poor tilth, rapid surface runoff, and low available moisture capacity. Because of their steep slope and the numerous stones, they are not suited to cultivated crops and are probably best suited to trees. All of the acreage is wooded. (Capability unit VIIe–2; woodland group 6; wildlife group 8.)

Roanoke Series

The Roanoke series consists of poorly drained, strongly acid soils that have a surface layer of silt loam and a grayish subsoil. These soils developed in old alluvium on nearly level, low stream terraces, barely above the present flood plains.

The Roanoke soils occur with the Augusta and Altavista soils on terraces and are next to the Chewacla and Wehadkee soils of the flood plains. They are more poorly drained and have a grayer subsoil than the Augusta, Altavista, or Chewacla soils, and they have more distinct horizons than the Chewacla and Wehadkee soils.

The native vegetation was willow, water oak, white oak, sweetgum, elm, hickory, poplar, sourwood, and pine. The Roanoke soils are in small areas along the larger streams of the county.

Roanoke silt loam (0 to 2 percent slopes) (Ron).—This is the only Roanoke soil mapped in the county. It is poorly drained and is on low stream terraces. The following are the major horizons:

0 to 5 inches, grayish-brown silt loam mottled with olive and gray.
5 to 10 inches, light-gray sandy loam mottled with yellowish brown.
10 to 30 inches, mottled light brownish-gray, light-gray, brown, and white clay to sandy clay; extremely firm; blocky structure.
30 to 41 inches +, mottled light-gray, white, and light yellowish-brown sandy clay loam.

The color of the surface layer ranges from grayish brown to dark gray. In some places the layer directly beneath the surface layer is brownish-gray silt loam rather than sandy loam. The color of the subsoil ranges from light brownish gray to light gray, and the texture ranges from clay to silty clay. The texture of the underlying material is highly variable.

This soil has fair tilth, and crops grown on it make fair response to fertilizer. The content of organic matter is moderate, but the supply of available plant nutrients is low. Surface runoff is very slow, permeability is slow, and the rate of infiltration is medium. The available moisture capacity is high.

This soil is suited to a limited number of crops, but it can be used intensively if it is ditched to remove excess surface water and to improve internal soil drainage. Most of the acreage is wooded, but a few acres are in pasture. (Capability unit IVw–1; woodland group 11; wildlife group 11.)

Rock Land (Roc)

Rock land has granite bedrock at the surface or within a few inches of the surface. There are pockets of coarse-textured soil material that has little horizonation. These pockets cover 40 to 50 percent of the acreage. This miscellaneous land type is in small areas throughout the county, but the total acreage is small. The slope ranges from 4 to 60 percent.

Generally, plants in areas of Rock land cannot make continuous growth. A few trees, shrubs, and grasses, however, have survived for years in small pockets of soil material or in crevices in the rocks. This land type can be developed to a limited extent for recreational use and to provide a little food and cover for wildlife. (Capability unit VIIIs–1; wildlife group 8.)

Thurmont Series

The Thurmont series consists of strongly acid, well-drained soils that have a subsoil of strong-brown to yellowish-brown sandy clay loam to clay loam that is mottled in the lower part. The soils developed in old local alluvium from sandstone and quartzite. They have smooth slopes that range from 2 to 15 percent.

The Thurmont soils occur with the Braddock soils, which also formed in old local alluvium. They are adjacent to areas of Cobbly and gravelly land on Pine Mountain, and they adjoin the Cecil and Madison soils where they border soils formed in residuum. The Thurmont soils have a mottled subsoil of strong brown to yellowish brown instead of a red subsoil like that of the Braddock soils. They have a thick and distinct B horizon, in contrast to the very weak horizonation in the areas of Cobbly and gravelly land. Their B horizon is less reddish than that of the Cecil or Madison soils, which developed in residuum.

The Thurmont soils occur in fairly large areas near Pine Mountain along the southern border of the county. The natural vegetation was oak, hickory, and pine.

Thurmont loamy sand, 2 to 6 percent slopes (TkB).—This is a well-drained soil developed in old local alluvium that washed and rolled from Pine Mountain. The following are the major horizons:

0 to 6 inches, pale-brown loamy sand with many slightly rounded pebbles on the surface.
6 to 29 inches, strong-brown to yellowish-brown sandy clay loam to clay loam with a few pebbles; friable; blocky structure; mottled in the lower part with yellowish red.
29 to 33 inches +, layer of rounded gravel mixed with mottled clay.

The texture of the surface layer is near the dividing line between loamy sand and sandy loam, and the color ranges from yellowish brown to pale brown. The texture of the subsoil is clay loam to sandy clay loam, and the color ranges from yellowish brown to strong brown.

Included with this soil in mapping are a few areas that have a surface layer of loamy sand that is 18 to 20 inches thick. Also included are a few eroded areas that have a little of the subsoil mixed with the surface layer. In those places the surface layer is yellowish brown, and the texture ranges from sandy loam to light sandy clay loam. There is an occasional shallow, V-shaped gully that penetrates 10 to 12 inches into the subsoil.

The tilth of Thurmont loamy sand, 2 to 6 percent slopes, is good in most places, and crops grown on this soil respond well to fertilizer. The content of organic matter is low, and the supply of available plant nutrients is moderate. Surface runoff is slow, permeability is moderate, and the rate of infiltration is rapid. The available moisture capacity is moderate.

This soil is suited to most of the crops grown locally. The gentle slopes, good tilth, and favorable moisture relationships make this soil well suited to intensive cultivation, but there is a slight to moderate hazard of erosion. About 50 percent of the acreage is used for cultivated crops, and 10 percent is in pasture. (Capability unit IIe–2; woodland group 1; wildlife group 1.)

Thurmont loamy sand, 6 to 10 percent slopes (TkC).—This soil is steeper and has a few more galled spots than Thurmont loamy sand, 2 to 6 percent slopes. Surface runoff is medium.

The good tilth, deep rooting zone, and favorable moisture capacity make this soil suited to most of the crops grown locally, but there is a moderate hazard of erosion. Most of the acreage is wooded, but several areas are used for cultivated crops, and some areas are used for pasture. (Capability unit IIIe–2; woodland group 1; wildlife group 1.)

Thurmont loamy sand, 10 to 15 percent slopes (TkD).—This soil is steeper and has more rapid surface runoff than Thurmont loamy sand, 2 to 6 percent slopes. Included in the areas mapped are a few cobbly or gravelly areas that have only a slightly developed B horizon. Also included are a few eroded areas that have a yellowish-brown surface layer that ranges in texture from sandy loam to sandy clay loam. There are a few galled spots and shallow gullies in these areas.

Thurmont loamy sand, 10 to 15 percent slopes, has good soil tilth. Crops grown on this soil generally make good response to fertilizer. The strong slopes and medium surface runoff, however, cause a severe hazard of erosion if this soil is used for cultivated crops.

This soil is better suited to perennial vegetation than to continuous cultivation. Most of the acreage is wooded. (Capability unit IVe–1; woodland group 1; wildlife group 2.)

Vance Series

The Vance series consists of moderately well drained, very strongly acid soils that have a subsoil of tough clay. These soils developed in residuum from acid igneous and metamorphic rocks, such as granite, gneiss, and schist. The Vance soils are on narrow divides and short slopes that range from 2 to 15 percent.

The Vance soils occur with the Cecil, Appling, and Colfax soils. Their subsoil is thinner, firmer, and more plastic than that of the Cecil or Appling soils. They are less reddish than the Cecil soils and less sandy than the Appling soils. The Vance soils are better drained and less grayish than the Colfax soils, and their subsoil is finer textured and more firm.

The Vance soils occur in small areas throughout the county. Most of the acreage is in the northeastern part.

The natural vegetation was oak, hickory, and pine. Most areas have been cleared, but more than half the acreage is now in pine trees. The rest is used for corn, cotton, pimento peppers, small grains, hay, and pasture.

Vance loamy coarse sand, 2 to 6 percent slopes, eroded (VdB2).—This is a moderately well drained soil that has a subsoil of reddish-yellow, tough clay. The following are the major horizons:

0 to 6 inches, dark grayish-brown loamy coarse sand that has a few quartz pebbles on the surface.
6 to 26 inches, reddish-yellow to yellowish-red clay mottled with red and yellowish brown; tough; plastic; blocky structure.
26 to 60 inches +, reddish-yellow coarse sandy clay loam with mottles of gray where there is material weathered from feldspar.

The color of the surface layer ranges from light brownish gray to dark grayish brown. The texture is near the dividing line between coarse sandy loam and loamy coarse sand. The subsoil is yellowish brown or strong brown, with red and light-brown mottles. In some places the texture of the subsoil is sandy clay.

Throughout most of the acreage, erosion has removed enough of the surface layer that the subsoil is reached easily by tillage implements. The subsoil is so firm, however, that little of it is displaced by plowing. A few small areas of a more severely eroded soil are included in the mapped areas of this soil. In these included areas the surface layer is yellowish-brown sandy clay loam or heavy sandy loam.

Surface runoff is medium on Vance loamy coarse sand, 2 to 6 percent slopes, eroded. The rate of infiltration is moderate, and permeability is slow. The available moisture capacity is low.

This soil is suited to only a limited number of crops, and yields are only moderate. Keeping close-growing vegetation on the soil about half the time improves the soil tilth and helps to protect the soil from further erosion. (Capability unit IIe–3; woodland group 8; wildlife group 5.)

Vance loamy coarse sand, 6 to 10 percent slopes, eroded (VdC2).—Surface runoff is more rapid on this soil than on Vance loamy coarse sand, 2 to 6 percent slopes, eroded. Also, more of the surface layer has been removed by erosion, and in many areas the surface layer consists of only about 4 inches of sandy loam. There are a few shallow gullies or galled spots, and in these the surface layer is reddish-yellow sandy clay loam.

Soil tilth is fair. Crops grown on this soil make good response to fertilizer. This soil is moderately well suited to most crops grown locally. However, the moderate slope, fairly rapid runoff, moderate rate of infiltration, and slow permeability are such that further erosion is a moderate to severe hazard. More than half of the acreage is wooded. (Capability unit IIIe–3; woodland group 8; wildlife group 5.)

Vance loamy coarse sand, 10 to 15 percent slopes, eroded (VdD2).—Surface runoff is more rapid on this soil than on Vance loamy coarse sand, 2 to 6 percent slopes, eroded, and there are a few cobbly areas. Also, the solum is somewhat thinner. It commonly ranges from 18 to 22 inches deep over weathered rock. Soil tilth and the response of crops to fertilizer are fair.

This soil is moderately well suited to most crops grown locally, but it is better suited to perennial vegetation than to cultivated crops. The strong slopes and poor moisture relationships make further erosion a severe hazard. Most of the acreage is wooded. (Capability unit IVe–2; woodland group 8; wildlife group 2.)

Vance sandy clay loam, 6 to 10 percent slopes, severely eroded (VbC3).—The surface layer of this soil is yellowish-brown to reddish-yellow sandy clay loam that is 4 to 5 inches thick. The soil material is commonly 18 to 22 inches thick over weathered rock. There are a few shallow gullies, and a few areas are gravelly and cobbly. Soil tilth is poor. Crops grown on this soil make poor response to fertilizer. The content of organic matter and the supply of available plant nutrients are low. Surface runoff is rapid, and the rate of infiltration is slow.

This soil is moderately well suited to a limited number of crops. The poor tilth, rapid runoff, poor moisture relationships, and the very severe hazard of further erosion, however, make it better suited to perennial vegetation than to cultivated crops. Most of the acreage is wooded, but a few acres are idle. (Capability unit IVe–2; woodland group 9; wildlife group 3.)

Wehadkee Series

The Wehadkee series consists of poorly drained, very strongly acid soils that have a surface layer of silty clay loam and a subsoil of gray silty clay loam. These soils developed in recent alluvium on nearly level flood plains.

The Wehadkee soils occur with the Chewacla and Roanoke soils. They are grayer and finer textured than the Chewacla soils, and they have a higher water table. The Wehadkee soils have less distinct horizons than the Roanoke soils.

The Wehadkee soils are in narrow strips along the larger streams of the county. Their total acreage is small. The original vegetation was elm, willow, poplar, gum, oak and hickory. Most areas have been heavily cut over but are still forested.

Wehadkee silty clay loam (0 to 2 percent slopes) (Weh).—This is the only Wehadkee soil mapped in the county. It is gray and poorly drained, and it occurs on first bottoms. The following are the major horizons:

0 to 7 inches, olive-gray silty clay loam with faint mottles of dark gray and light gray; friable; contains partly decayed organic matter.
7 to 25 inches, light-gray silty clay loam mottled with brownish yellow; massive; plastic.
25 to 37 inches +, stratified, light-gray fine sandy loam to silty clay loam.

The color of the profile varies among several shades of gray, but it commonly becomes lighter with increasing depth. In a few places the surface layer is brown silt loam to silty clay loam and is 3 to 5 inches thick.

Surface runoff is very slow to ponded; permeability and the rate of infiltration are slow. The available moisture capacity is high. Soil tilth is poor, and crops grown on this soil make only a poor response to fertilizer. The content of organic matter is relatively high, but the supply of available plant nutrients is low. Excess water is a severe hazard.

In most places outlets are not available for drainage ditches, but if drainage can be installed, this soil is moderately well suited to a limited number of crops. Nearly all of the acreage is wooded, but a few acres are used for pasture. (Capability unit IVw–1; woodland group 11; wildlife group 11.)

Wickham Series

The Wickham series consists of well-drained, strongly acid soils that have a subsoil of red, firm clay loam. These soils developed in old alluvium, on high stream terraces near the Flint River and the larger creeks of the county. The slope ranges from 2 to 10 percent.

The Wickham soils occur in the same general areas as the Altavista and Augusta soils, but they are higher above the flood plain than those soils. Also, they have a redder subsoil than the Altavista and Augusta soils. The Wickham soils occur with the Cecil and Madison soils, where soils formed on old alluvial material adjoin those formed in residuum. They are more friable than the Cecil soils, and they contain less mica than the Madison soils. They also have a few water-rounded pebbles throughout the profile.

Wickham fine sandy loam, 2 to 6 percent slopes, eroded (WgB2).—This well-drained soil of terraces has a subsoil of red clay loam. The following are the major horizons:

0 to 6 inches, yellowish-brown fine sandy loam; contains a few water-rounded pebbles.
6 to 9 inches, yellowish-red, friable sandy clay loam; blocky structure.
9 to 43 inches, red, firm clay loam; blocky structure; contains a few water-rounded pebbles and a few mica flakes.
43 to 48 inches +, weakly cemented layer of water-rounded pebbles.

The color of the surface layer is pale brown in less eroded areas and reddish yellow in areas where a little of the subsoil has been plowed up and mixed with the material in the surface layer. In some places there is a transitional layer of red clay loam to sandy clay loam between the subsoil and the underlying weathered schist. In some areas the texture of the subsoil ranges to clay. Included in the mapped areas of this soil is an area of 25 acres in which the surface layer is dark reddish brown and the subsoil is dark red.

Surface runoff is slow on Wickham fine sandy loam, 2 to 6 percent slopes, eroded. Permeability and the rate of infiltration are moderate, and the available moisture capacity is high. The soil is easy to work, and crops grown on it make good response to fertilizer.

This soil is suited to most of the crops grown locally, and under good management, yields are moderate to high. This soil can be cultivated intensively, but there is a slight to moderate hazard of further erosion. About half the acreage is cultivated. (Capability unit IIe–1; woodland group 6; wildlife group 1.)

Wickham fine sandy loam, 6 to 10 percent slopes, eroded (WgC2).—Surface runoff on this soil is medium. In many places enough of the subsoil has been mixed with the material in the surface layer to give the present surface layer a yellowish-red color.

Included in the mapped areas of this soil are a few areas in which the surface layer is yellowish-red sandy clay loam. There are a few shallow gullies and galled spots.

Wickham fine sandy loam, 6 to 10 percent slopes, eroded, is suited to a number of different crops, and yields are generally moderate to high. The moderate slopes and medium surface runoff, however, cause a moderate to severe hazard of further erosion if this soil is cultivated. More than half the acreage is wooded. (Capability unit IIIe–1; woodland group 6; wildlife group 1.)

Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded (WnC3).—The surface layer of this soil is yellowish-red sandy clay loam that is 4 to 6 inches thick. Directly below the surface layer is red clay loam. The soil material is commonly 30 to 34 inches thick over gravel and weathered rock. A few small areas in which the surface layer is brown sandy loam are included in the mapped areas of this soil.

Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded, has only fair tilth, but response to fertilizer is good. Surface runoff is medium, and permeability and the rate of infiltration are moderate. The soil has moderate available moisture capacity. If this soil is cultivated, the moderate slopes, moderate rate of infiltration, and medium runoff cause a severe to very severe hazard of further erosion. Nearly all of the acreage has been cultivated, but most of it is now wooded. (Capability unit IVe–1; woodland group 7; wildlife group 3.)

Wilkes Series

The Wilkes series consists of shallow, moderately well drained to excessively drained soils on uplands. These soils formed mainly in material weathered from dark-colored, mixed basic and acidic rocks. They have a surface layer of stony loamy sand and a subsoil of dark yellowish-brown clay mixed with partly weathered rock. The Wilkes soils are not mapped separately in this county but are mapped in an undifferentiated unit with Musella soils. A profile that is considered typical for this series is described under Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded.

Worsham Series

The Worsham series consists of poorly drained, strongly acid soils that have a sandy surface layer and a subsoil of gray, mottled clay. The soils developed in residuum from gneiss and granite and in local alluvium. They are in small depressions and around the heads of drainageways. The slopes are commonly concave and range from 2 to 6 percent.

The Worsham soils occur with the Colfax, Appling, Cecil, and Louisburg soils, but they are grayer and more poorly drained than any of those soils. They have a thicker and more distinct B horizon than the Louisburg soils.

Worsham coarse sandy loam, 2 to 6 percent slopes (WoB).—This soil of the uplands has a surface layer of coarse sandy loam and a subsoil of gray, mottled clay. It is poorly drained. Water is at or near the surface during much of the winter. The following are the major horizons:

0 to 7 inches, light grayish-brown coarse sandy loam.
7 to 28 inches, light-gray sandy clay loam to clay with many mottles of brownish yellow to strong brown.
28 to 36 inches +, white sandy clay loam.

In a few places overwash consisting of light yellowish-brown sandy loam that is 2 to 4 inches thick is on the surface. In places the subsoil is sandy clay. Coarse sand grains of quartz are prominent throughout the profile. In a few places this soil extends into areas where the slopes are between 6 and 10 percent.

This soil is hard to work, and crops grown on it make poor response to fertilizer. The content of organic matter is moderate, and the supply of available plant nutrients is low. Surface runoff is very slow to ponded. Permeability is slow, and the rate of infiltration and the available moisture capacity are moderate.

This soil has a limited range of suitability for crops, and yields are commonly low. Ditching is needing to remove excess surface water and to improve internal drainage. All of this soil is either wooded or in pasture. (Capability unit Vw–1; woodland group 10; wildlife group 11.)

Use and Management of the Soils

This section discusses the system of capability classification used by the Soil Conservation Service, gives the classification of the soils of the county according to that system, and describes management practices for groups of soils that have similar potential and similar management requirements. Then, it gives estimates of average yields of the common crops and discusses the effect of climate on crop yields. Finally, it describes the use and management of the soils for woodland and wildlife and gives facts about characteristics of the soils that are significant in road construction and other engineering uses.

Capability Groups of Soils

The capability classification is a grouping of soils that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soil are grouped at three levels, the capability class, subclass, and unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so

rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes, there can be up to four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numerals, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited, mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the country, indicates that the chief limitation is a climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses *w*, *s*, and *c*, because the soils in it have little or no susceptibility to erosion but have other limitations that restrict their use largely to pasture, range, woodland, or wildlife.

Within the subclasses are the capability units, groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally identified by numbers assigned locally, for example, IIe–1 or IIIe–2.

Soils are classified in capability classes, subclasses, and units in accordance with the degree and kind of their permanent limitations; but without consideration of major and generally expensive landforming that would change the slope, depth, or other characteristics of the soil; and without consideration of possible but unlikely major reclamation projects.

The capability classes, subclasses, and units in which the soils of Meriwether County are classified are defined in the listing that follows. The soils were assigned to capability units on a statewide basis. Because not all of the capability units in the State are represented in this county, the numbering of the units may not be consecutive. For example, no soils of capability unit IIw–1 have been recognized in Meriwether County. Therefore, this capability unit is not discussed in this report.

Class I: Soils that have few limitations that restrict their use.
- Unit I–1: Nearly level, well drained or moderately well drained soil in pockets or draws.

Class II: Soils that have some limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIe: Soils subject to moderate erosion if they are not protected.
  - Unit IIe–1: Slightly to moderately eroded soils that have a dominantly loamy surface layer and a subsoil of red or dark-red clay to clay loam.
  - Unit IIe–2: Slightly to moderately eroded soils that have a surface layer of fine sandy loam or loamy sand, and a subsoil that is brownish to reddish sandy clay loam to clay.
  - Unit IIe–3: Moderately eroded soils that have a loamy or sandy surface layer and a subsoil of very firm clay.
- Subclass IIw: Soils that have moderate limitations because of excess water.
  - Unit IIw–2: Moderately well drained bottomland soils that are susceptible to occasional flooding.

Class III: Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
- Subclass IIIe: Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe–1: Slightly to severely eroded soils that have a dominantly loamy surface layer and a subsoil of red or dark-red clay to clay loam.
  - Unit IIIe–2: Slightly to moderately eroded soils that have a surface layer of loamy sand, and a subsoil of brownish to reddish sandy clay loam to clay.
  - Unit IIIe–3: Moderately eroded soils that have a surface layer of loamy coarse sand and a subsoil of reddish-yellow, very firm clay.
  - Unit IIIe–5: Shallow, sandy soil over granitic rock.
- Subclass IIIw: Soils that have severe limitations because of excess water.
  - Unit IIIw–2: Somewhat poorly drained, loamy soils on first bottoms that are subject to flooding.
  - Unit IIIw–3: Somewhat poorly drained soils that have a compact subsoil mottled with gray and brown.
- Subclass IIIs: Soils that have severe limitations of moisture capacity or tilth.
  - Unit IIIs–1: Deep loamy sand on first bottoms; subject to occasional flooding.

Class IV: Soils that have very severe limitations that restrict the choice of plants, or that require very careful management, or both.
- Subclass IVe: Soils subject to very severe erosion if they are cultivated and not protected.
  - Unit IVe–1: Sloping soils that have a dominantly loamy surface layer, and a subsoil of yellowish-brown to dark-red clay to sandy clay loam.
  - Unit IVe–2: Shallow to moderately deep, sloping soils that are moderately to severely eroded.
  - Unit IVe–4: Shallow soils consisting of coarse sandy loam or loamy coarse sand over micaceous or granitic rock.
- Subclass IVw: Soils that have very severe limitations for cultivation, because of excess water.
  - Unit IVw–1: Poorly drained soils on first bottoms or low terraces that are subject to frequent flooding.

Class V: Soils not likely to erode that have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife food and cover.
- Subclass Vw: Soils too wet for cultivation; drainage or protection not feasible.

Unit Vw–1: Poorly drained soils that have a gray, compact, clayey subsoil and are in upland depressions.

Class VI: Soils that have severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIe: Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.

Unit VIe–2: Dominantly strongly sloping or very severely eroded soils that have a subsoil of sandy clay loam to clay.

Unit VIe–3: Shallow soils consisting of coarse sandy loam or loamy coarse sand over micaceous or granitic rock.

Unit VIe–4: Shallow, severely eroded soils that have a surface layer of clay loam and a subsoil of dark-red clay loam.

Subclass VIs: Soils generally unsuitable for cultivation and limited for other uses by their moisture capacity, stones, or other features.

Unit VIs–1: Shallow, sloping soils that are stony or cobbly.

Class VII: Soils that have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIe: Soils very severely limited, chiefly by risk of erosion if protective cover is not maintained.

Unit VIIe–1: Severely or very severely eroded, shallow to moderately deep soils.

Unit VIIe–2: Shallow, sloping soils that are dominantly stony or cobbly.

Unit VIIe–4: Gullied land.

Class VIII: Soils and landforms that have limitations that preclude their use for commercial production of plants; and restrict their use to recreation, wildlife, water supply, or esthetic purposes.

Subclass VIIIs: Rock or soil materials that have little potential for production of vegetation.

Unit VIII–1: Rock land.

Management by Capability Units [4]

The soils in a given capability unit have about the same limitations and risk of damage, need about the same management, and respond to management in about the same way. In the following pages each capability unit is described, the soils in it are named, and management for the group is suggested.

CAPABILITY UNIT I–1

Nearly level, well drained to moderately well drained soil in pockets or draws

Only one mapping unit, Local alluvial land, is in this capability unit. This deep, strongly acid soil is around the heads of draws or in slight depressions. Depth to bedrock is commonly more than 15 feet. The slopes are between 0 and 2 percent.

This land is easily worked. It consists of friable loamy sand to sandy loam to a depth of 12 to 20 inches. Permeability and the rate of infiltration are moderate. Surface runoff is slow, and the available moisture capacity is high. The content of organic matter is low to moderate, and the supply of available plant nutrients is moderate. Soil tilth and response of crops to fertilizer are good.

This land is suited to nearly all of the crops grown locally, and under good management, yields are high. The crops commonly grown are corn, cotton, peaches, vegetables, small grains, pimento peppers, and grain sorghum. Row crops may be grown year after year if ordinary good management is practiced. All plant residues should be left on the surface between seasons of crop production and on or near the surface whenever possible while the crop is growing. To maintain high yields, apply lime every 3 to 5 years, and a complete fertilizer annually, based on the results of soil tests. The following are examples of suitable cropping systems:

1. Corn grown year after year.
2. Cotton grown year after year. A winter cover crop should be planted every second year.

As a rule, no supporting practices are needed. Diversion channels or open ditches are needed, however, to give protection from runoff from higher areas.

This land is well suited to most plants grown locally for hay and pasture, such as bermudagrass, tall fescue, dallisgrass, bahiagrass, and the lespedezas and clovers. For maximum yields and for the maximum protection of the soil material, these crops should be managed to maintain a growth of at least 4 inches.

This land is suitable for sprinkler irrigation if a supply of water is available.

CAPABILITY UNIT IIe–1

Slightly to moderately eroded soils that have a dominantly loamy surface layer and a subsoil of red or dark-red clay to clay loam

In this capability unit are deep, well-drained, strongly acid soils that are slightly to moderately eroded. The soils are on smooth divides or on high stream terraces. The slopes range from 2 to 6 percent. Depth to bedrock is commonly more than 6 feet.

The soils in this unit are—

Braddock sandy loam, 2 to 6 percent slopes, eroded.
Cecil sandy loam, 2 to 6 percent slopes.
Cecil sandy loam, 2 to 6 percent slopes, eroded.
Davidson loam, 2 to 6 percent slopes, eroded.
Lloyd sandy loam, 2 to 6 percent slopes, eroded.
Madison sandy loam, 2 to 6 percent slopes, eroded.
Wickham fine sandy loam, 2 to 6 percent slopes, eroded.

The plow layer of these soils is friable and is 5 to 8 inches thick. The subsoil is moderately permeable, firm to friable clay to clay loam. Surface runoff is slow, the rate of infiltration is moderate, and the available moisture capacity is moderately high. The content of organic matter and the supply of available plant nutrients are low to moderate. Response of crops to fertilizer is good on all of these soils, except the Davidson, where response is a little slower. Soil tilth is good, except for the gravelly soil.

These soils are well suited to all the crops grown locally, and high yields are obtained under good management. The crops commonly grown are corn, cotton, small grains, peaches, pimento peppers, grain sorghum, and vegetables. The hazard of erosion is great enough to require that close-

[4] J. N. NASH, conservation agronomist, Soil Conservation Service, assisted with the preparation of this section.

growing crops, soil-improving crops, or high-residue-producing crops be grown at least 1 year out of every 2 or 3. To maintain high yields, apply lime every 3 to 5 years, and a complete fertilizer annually, based on the results of soil tests. Also, keep a protective cover of plant residues or growing plants on the surface between seasons, and plant residues on or near the surface whenever feasible while the crop is growing. Suitable cropping systems are—

1. *First year:* Corn cultivated shallow and laid by early; after the corn has been harvested, mow the stubble and leave it unplowed throughout the winter. *Second year:* Cotton followed by a small grain drilled in the stubble that has been mowed or disked. *Third year:* Small grain followed by straw and stubble undisturbed, or by lespedeza.
2. *First year:* Corn. *Second year:* Cotton followed by a small grain. *Four years or more:* Alfalfa.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping and contour farming help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

The soils in this capability unit are well suited to alfalfa, bermudagrass, sericea lespedeza, and most other plants commonly grown for hay and pasture. For maximum yields and for maximum protection of the soils, a growth of at least 4 inches should be maintained.

These soils are suitable for sprinkler irrigation if a supply of water is available.

CAPABILITY UNIT IIe-2

Slightly to moderately eroded soils that have a surface layer of fine sandy loam or loamy sand and a subsoil that is brownish to reddish sandy clay loam to clay

Deep to moderately deep, well drained to moderately well drained, strongly acid soils are in this capability unit. The soils are on stream terraces, at the base of mountains, or on smooth slopes. The slopes range from 2 to 6 percent. Depth to bedrock is commonly more than 6 feet.

The soils in this unit are—

Altavista fine sandy loam, 2 to 6 percent slopes.
Appling loamy sand, 2 to 6 percent slopes.
Appling loamy sand, 2 to 6 percent slopes, eroded.
Habersham gravelly loamy sand, 2 to 6 percent slopes.
Thurmont loamy sand, 2 to 6 percent slopes.

The plow layer is very friable loamy sand or fine sandy loam and is 6 to 8 inches thick. The subsoil is moderately permeable, friable sandy clay loam to clay that in much of the acreage is mottled in the lower part. Surface runoff is slow, the rate of infiltration is rapid to moderate, and the available moisture capacity is moderate to moderately high. The content of organic matter and the supply of available plant nutrients are low to moderate. Response of crops to fertilizer is generally good. In general the soils are in good tilth, but tilth is only fair in the few gravelly areas.

The soils in this capability unit are suited to most of the crops grown locally, and yields are high under good management. Suitable crops are corn, cotton, oats, grain sorghum, and vegetables. These soils are generally poorly suited to wheat and alfalfa. Peaches are suited to the Appling soils. The hazard of erosion is great enough that close-growing crops, or high-residue-producing crops are needed at least 1 year out of every 2 or 3. A protective cover of plants or plant residues should be kept on the surface between seasons of crop production, and on or near the surface whenever feasible while the crop is growing. To maintain high yields, add lime every 3 to 5 years, and apply a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *First year:* Silage, cotton, or truck crops followed by oats or rye. *Second year:* Oats or rye followed by grain sorghum.
2. *Two or more years:* Coastal bermudagrass. *One year:* Corn grown for grain or silage.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping and contour farming help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

The soils of this capability unit are suited to most hay and pasture plants grown locally, such as bermudagrass, tall fescue, bahiagrass, dallisgrass, and all the clovers and lespedezas. For maximum yields and for the maximum protection of the soils, a growth of at least 4 inches should be maintained.

These soils are suitable for sprinkler irrigation if a supply of water is available.

CAPABILITY UNIT IIe-3

Moderately eroded soils that have a loamy or sandy surface layer and a subsoil of very firm clay

The soils in this capability unit have a moderately deep to shallow rooting zone and are moderately well drained. They are generally very strongly acid, but some areas of the Iredell soil are medium acid. The soils of this unit are moderately eroded. The slopes are short and irregular and are between 2 and 6 percent. Depth to bedrock is commonly 3 to 6 feet.

The soils in this capability unit are—

Iredell sandy loam, 2 to 6 percent slopes, eroded.
Vance loamy coarse sand, 2 to 6 percent slopes, eroded.

These soils have a plow layer of sandy loam or loamy coarse sand that is 4 to 6 inches thick. The plow layer is generally very friable. The subsoil is very firm to extremely firm clay and is slowly to very slowly permeable. It is yellowish red in the Vance soil and olive yellow in the Iredell soil. In the Iredell soil the depth to which roots can penetrate is limited to about 10 inches by the extremely firm and plastic subsoil. Surface runoff is medium, and the rate of infiltration is moderate. The available moisture capacity is low for the Vance soil and moderate for the Iredell. The content of organic matter and the supply of available plant nutrients are low. Soil tilth is fair, and the response of crops to fertilizer is fair to good.

These soils are well suited only to grain sorghum. They are moderately well suited to cotton, corn, oats, and rye. Yields are moderate under good management. The hazard of erosion is great enough to require that close-growing crops, soil-improving crops, or high-residue-pro-

ducing crops be grown at least every other year. Maintain a protective cover of plants or plant residues on the surface between seasons of crop production and on or near the surface whenever feasible while the crop is growing. To maintain moderate yields, add lime every 2 or 3 years and apply a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *First year:* Grain sorghum followed by ryegrass. *Second year:* Annual lespedeza for seed.
2. *First year:* Corn cultivated shallow and laid by early. After the corn has been harvested, mow the stubble and leave unplowed throughout the winter. *Second year:* Silage or cotton followed by oats or rye drilled in the stubble that has been mowed or disked. *Third year:* Oats or rye followed by straw and stubble undisturbed, or by lespedeza.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping and contour farming help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

The soils in this capability unit are moderately well suited to hay and pasture plants, such as tall fescue, bermudagrass, ryegrass, lespedeza, and some of the clovers. For maximum yields and for the maximum protection of the soils, a growth of at least 4 inches should be maintained.

CAPABILITY UNIT IIw-2

Moderately well drained bottom-land soils that are susceptible to occasional flooding

Only one miscellaneous land type, Alluvial land, is in this capability unit. It is deep, moderately well drained, and strongly acid, and it is on nearly level first bottoms. Depth to bedrock is commonly more than 10 feet, and depth to a seasonally high water table is about 24 inches.

This land type is dominantly very friable loamy sand to sandy loam to a depth of about 30 inches. Permeability and the rate of infiltration are rapid. Surface runoff is slow, and the available moisture capacity is high. The content of organic matter and the supply of available plant nutrients are low to moderate. Soil tilth is good, and crops make good response to fertilizer.

This land type is suited to corn, grain sorghum, oats, and rye. For high yields, it is necessary to add lime every 3 to 5 years and to apply a complete fertilizer annually, based on the results of soil tests. Row crops can be grown year after year if ordinary good management is practiced. All plant residues should be left on the surface between seasons and on or near the surface whenever feasible while the crop is growing. Suitable cropping systems are—

1. Corn grown year after year.
2. *First year:* Silage or truck crops followed by oats or rye. *Second year:* Oats or rye followed by grain sorghum.

Diversion channels or ditches are needed in some places to protect this land type from runoff from higher soils of the uplands. In some small areas open ditches are needed to provide internal drainage. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

This land type is suited to all the hay and pasture plants grown locally, except alfalfa. Suitable plants are bermudagrass, tall fescue, dallisgrass, bahiagrass, and the clovers and lespedezas. For maximum production, these crops should be managed to maintain a growth of at least 4 inches.

This land type is suitable for sprinkler irrigation if a supply of water is available.

CAPABILITY UNIT IIIe-1

Slightly to severely eroded soils that have a dominantly loamy surface layer and a subsoil of red or dark-red clay to clay loam

The soils in this capability unit are deep, well drained, and strongly acid. They are on slightly to severely eroded broad divides or high stream terraces, and they have slopes of 2 to 10 percent. Depth to bedrock is commonly more than 6 feet.

The soils in this capability unit are—

Braddock sandy loam, 6 to 10 percent slopes, eroded.
Cecil sandy loam, 6 to 10 percent slopes.
Cecil sandy loam, 6 to 10 percent slopes, eroded.
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
Davidson loam, 6 to 10 percent slopes, eroded.
Davidson clay loam, 2 to 6 percent slopes, severely eroded.
Lloyd sandy loam, 6 to 10 percent slopes, eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Madison sandy loam, 6 to 10 percent slopes, eroded.
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.
Wickham fine sandy loam, 6 to 10 percent slopes, eroded.

The plow layer is 4 to 8 inches thick, and in areas where the soils are not severely eroded, it is sandy loam to loam. In severely eroded areas, the plow layer is clay loam to sandy clay loam. The severely eroded soils have only fair tilth, but the other soils are easily worked. The subsoil is firm to friable clay or clay loam and is moderately permeable. Surface runoff is medium. The rate of infiltration is slow for the severely eroded soils and moderate for all of the others. The available moisture capacity is moderate to high. The content of organic matter and the supply of available plant nutrients are low to moderate. Response of crops to fertilizer is generally good, but it is somewhat slower on those soils that have a surface layer of loam, sandy clay loam, or clay loam than on the others.

These soils are suited to all the crops grown locally, and under good management yields are moderate to high. The crops commonly grown are corn, cotton, small grains, peaches, pimento peppers, grain sorghum, and vegetables. The hazard of erosion is severe; as a result, clean cultivation should be practiced only to a limited extent. The farmer is also limited in his choice of crops and timing of planting, tilling, and harvesting operations. The severely eroded soils need a rotation that includes perennial vegetation.

Where annuals only are grown, all residues should be kept on the surface between seasons, and on or near the surface, if feasible, while the crop is growing. Close-growing crops or crops that produce a large amount of residue should be grown at least 2 years out of every 3 or 4. To maintain moderate to high yields, apply lime every 3 to 5 years and a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *First year:* Small grain and lespedeza. *Second year:* Small grain and volunteer lespedeza. *Third year:* Corn cultivated shallow and laid by early; after the corn has been harvested, mow the stubble and leave it unplowed throughout the winter. *Fourth year:* Silage or cotton followed by a small grain.
2. *First year:* Corn cultivated shallow and laid by early; after the corn has been harvested, mow the stubble and leave it unplowed throughout the winter. *Second year:* Cotton or silage. *Three years or more:* Coastal bermudagrass.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping, contour farming, or a combination of these practices help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

These soils are suited to alfalfa, sericea lespedeza, crimson clover, bermudagrass, bahiagrass, annual lespedeza, and most of the other crops grown locally for hay and pasture. For maximum yields and for maximum protection of the soils, the hay and pasture plants should be managed to maintain a growth of at least 4 inches.

These soils are suitable for sprinkler irrigation if a supply of water is available. Because of the erosion hazard, however, they are not suited to high-value row crops more than 2 years out of 4.

CAPABILITY UNIT IIIe-2

Slightly to moderately eroded soils that have a surface layer of loamy sand, and a subsoil of brownish to reddish sandy clay loam to clay

This capability unit consists of deep to moderately deep, well-drained, strongly acid soils that are slightly to moderately eroded. The soils are on smooth lower slopes or at the base of mountains. The slopes range from 6 to 10 percent. Depth to bedrock is commonly more than 6 feet.

The soils in this unit are—

Appling loamy sand, 6 to 10 percent slopes, eroded.
Habersham gravelly loamy sand, 6 to 10 percent slopes.
Thurmont loamy sand, 6 to 10 percent slopes.

The plow layer is very friable loamy sand that is 5 to 8 inches thick. Most areas are easily worked, but the gravelly areas are somewhat difficult to work. The subsoil is friable sandy clay loam to clay, and it is mottled in the lower part in much of the acreage. It is moderately permeable. Surface runoff is medium, the rate of infiltration is rapid, and the available moisture capacity is moderate to moderately high. The content of organic matter and the supply of available plant nutrients are low to moderate. Soil tilth and response of crops to fertilizer are generally good. In the few gravelly areas, however, tilth is only fair.

These soils are suited to many of the crops grown locally, and under good management, moderate to high yields are obtained. Suitable crops are corn, cotton, oats, grain sorghum, pimento peppers, vegetables, and peaches. The soils are generally poorly suited to wheat and alfalfa. The hazard of erosion is severe, and as a practice to control erosion, close-growing cover or crops that produce a large amount of residue should be grown a large part of the time. A protective cover of plants or of plant residues should be kept on the surface between seasons of crop production and on or near the surface where feasible while the crop is growing. To maintain moderate to high yields, apply lime every 3 to 5 years and a complete fertilizer annually, based on the results of soil tests. Close-growing crops or crops that produce a large amount of residue should be included in the cropping system at least 2 years out of every 3 or 4. Suitable cropping systems are—

1. *First year:* Oats or rye, and lespedeza. *Second year:* Oats or rye, and volunteer lespedeza. *Third year:* Corn cultivated shallow and laid by early. After the corn has been harvested, mow the stubble and leave it unplowed throughout the winter. *Fourth year:* Silage or cotton, followed by oats or rye.
2. *Two or more years:* Coastal bermudagrass. *One year:* Corn.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping, contour farming, or a combination of these practices help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

These soils are suited to Coastal bermudagrass, sericea lespedeza, bahiagrass, crimson clover, annual lespedeza, and many other plants grown locally for hay and pasture. For maximum yields and maximum protection of the soils, a growth of at least 4 inches should be maintained.

These soils are suitable for sprinkler irrigation if a supply of water is available. They are not suitable, however, for growing high-value row crops more than 2 years out of 4.

CAPABILITY UNIT IIIe-3

Moderately eroded soils that have a surface layer of loamy coarse sand and a subsoil of reddish-yellow, very firm clay

The only soil in this capability unit is Vance loamy coarse sand, 6 to 10 percent slopes, eroded. It is moderately well drained and very strongly acid, and it has a rooting zone that is about 24 inches deep. This soil is moderately eroded and is on short, irregular slopes. Depth to bedrock is commonly more than 3 feet.

The plow layer is loamy coarse sand that is 4 to 5 inches thick and very friable. The subsoil is very firm clay that is slowly permeable. Surface runoff is medium, and the rate of infiltration is moderate. The available moisture capacity is low. The content of organic matter and the supply of available plant nutrients are low. Soil tilth is fair, and the response of crops to fertilizer is good.

This soil is well suited only to grain sorghum. It is moderately well suited to cotton, corn, oats, annual lespedeza, ryegrass, and rye. Yields are moderate under good management. The hazard of erosion is severe, and close-growing vegetation, preferably perennial vegetation, should be grown 2 years out of every 3 or 4. To maintain moderate yields, apply lime every 2 or 3 years and a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *Two or more years:* Coastal bermudagrass. *One year:* Grain sorghum.

2. Oats or rye, year after year, followed by annual lespedeza.

This soil needs a complete water-disposal system, including terraces and vegetated outlets. Stripcropping, contour farming, or a combination of these practices help to control erosion. Field borders of a perennial grass should be established. The borders need to be wide enough for machinery to be turned and operated efficiently.

This soil is moderately well suited to bermudagrass, bahiagrass, sericea lespedeza, and annual lespedeza. For maximum yields and for maximum protection of this soil, a growth of at least 4 inches should be maintained.

CAPABILITY UNIT IIIe–5

Shallow, sandy soil over granitic rock

The only soil in this capability unit is Louisburg loamy coarse sand, 2 to 6 percent slopes. This soil is on narrow ridges or on irregular slopes, and it is somewhat excessively drained, strongly acid, and shallow to bedrock. It is only slightly eroded.

This soil has a surface layer of very friable loamy coarse sand. It is easily worked, except for a few stones. The surface layer overlies weathered granitic rock or hard granitic rock. In a few places there is a subsoil of sandy clay loam that is 4 to 8 inches thick. Permeability and the rate of infiltration are generally rapid. Surface runoff is slow, and the available moisture capacity is low. The content of organic matter and the supply of available plant nutrients are also low. Response to fertilizer is fair.

This soil is well suited only to grain sorghum. It is moderately well suited to cotton, corn, oats, and rye. Yields are moderate under good management. An appropriate perennial grass is best suited to use in the cropping systems. If annuals are grown, all the residue should be kept on the surface between seasons of crop production and on or near the surface, if feasible, while the crop is growing. To maintain moderate yields, add lime every 3 to 5 years and apply a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *First year:* Oats or rye and lespedeza. *Second year:* Oats or rye and volunteer lespedeza. *Third year:* Grain sorghum.
2. *Three or more years:* Coastal bermudagrass. *One year:* Corn or grain sorghum.

These soils need a complete water-disposal system, including terraces and vegetated outlets. Stripcropping and contour farming help to control erosion. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

This soil is moderately well suited to bermudagrass, bahiagrass, rescuegrass, ryegrass, sericea lespedeza, common lespedeza, and crimson clover. For maximum yields and for maximum protection of the soil, a growth of at least 4 inches should be maintained.

CAPABILITY UNIT IIIw–2

Somewhat poorly drained, loamy soils on first bottoms that are subject to flooding

The soils in this capability unit are deep, somewhat poorly drained, and strongly to very strongly acid. They are on nearly level first bottoms. Depth to bedrock is commonly more than 10 feet, and depth to a seasonally high water table is about 15 inches.

The soils in this capability unit are—

Alluvial land, moderately wet.
Chewacla silt loam.

The plow layer is loamy sand to sandy loam or silt loam, and it is 5 to 8 inches thick. It is very friable and is easily worked. Below the surface layer is very friable material ranging from loamy sand to silty clay loam. Permeability and the rate of infiltration are moderate to rapid. Surface runoff is slow, and the available moisture capacity is high. The content of organic matter and the supply of available plant nutrients are low to moderate. Response of crops to fertilizer is good. Soil tilth is generally good, but it is poor in some wet spots.

These soils are suited to corn and grain sorghum and are moderately well suited to oats and rye. Removal of excess water is necessary, and other good management practices must be used to obtain high yields. Row crops may be grown every year if cover crops or crops that produce a large amount of residue are grown occasionally to maintain the content of organic matter and good soil tilth. All plant residues should be left on the surface between crop seasons and on or near the surface, if feasible, while the crop is growing. To maintain high yields, apply lime every 3 to 5 years and a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *Row crop grown year after year:* Corn is a suitable crop; after harvest, the stubble should be mowed and left on the surface throughout the winter, or a winter cover, such as crimson clover, should be grown and turned under green at least every third year.
2. *Two years or more:* Bermudagrass, fescue, or bahiagrass. *One year:* Corn.

Ditches are needed to remove excess surface water and to improve internal soil drainage. In a few places these soils need diversion channels or ditches to protect them from runoff from higher soils of the uplands. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

The soils in this capability unit are suited to tall fescue, bermudagrass, dallisgrass, bahiagrass, rescuegrass, lespedeza, and whiteclover. For maximum yields, these pasture plants should be managed to maintain a growth of at least 4 inches.

These soils are suitable for sprinkler irrigation, and a supply of water is generally nearby. Although excess water is the main problem in managing the soils, there are a few weeks nearly every year when supplemental irrigation is beneficial.

CAPABILITY UNIT IIIw–3

Somewhat poorly drained soils that have a compact subsoil mottled with gray and brown

The soils in this capability unit are moderately deep to deep, somewhat poorly drained, and very strongly acid to strongly acid. They are on low terraces, on low slopes, or

around the heads of draws. Slopes range from 0 to 6 percent. Depth to bedrock is commonly more than 6 feet, and the depth to a seasonally high water table is about 12 inches.

The soils in this capability unit are—

Augusta sandy loam.
Colfax sandy loam, overwash, 2 to 6 percent slopes.
Colfax loamy coarse sand, 2 to 6 percent slopes.

The surface layer is sandy loam to loamy coarse sand and is 5 to 8 inches thick. It is very friable and is easily worked if adequately drained. The subsoil is mottled, friable, compact sandy clay loam. Permeability is slow to moderate; the rate of infiltration is moderate. Surface runoff is slow, and the available moisture capacity is moderate to high. The content of organic matter is low to moderate, and the supply of available plant nutrients is low. Response of crops to fertilizer is fair to good. Since wet spots are common, soil tilth is generally only fair.

These soils are suited to grain sorghum and are moderately well suited to corn and rye. Under good management yields are moderate. Excess water should be removed and plant residues should be left on the surface between cropping seasons, and on or near the surface, if feasible, while the crop is growing. To maintain moderate yields, use lime every 3 to 5 years and a complete fertilizer annually, based on the results of soil tests. Suitable cropping systems are—

1. *Row crops grown year after year:* Grain sorghum or corn are suitable; after harvest, mow the stubble and leave it unplowed throughout the winter.
2. *Four years:* Fescue and whiteclover. *Two years:* Corn.

Ditches are needed to remove excess surface water, to improve internal soil drainage, and to protect these soils from runoff from higher soils of uplands. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

The soils of this capability unit are suited to tall fescue and dallisgrass. They are moderately well suited to bermudagrass, bahiagrass, ryegrass, rescuegrass, lespedeza, whiteclover, and crimson clover. For maximum yields and for maximum protection of the soils, these plants need to be managed to maintain a growth of at least 4 inches.

CAPABILITY UNIT IIIs-1

Deep loamy sand on first bottoms; subject to occasional flooding

The only soil in this capability unit is Buncombe loamy sand. This is a deep, somewhat excessively drained, strongly acid soil on flood plains. Slopes range from 0 to 4 percent. Depth to bedrock is commonly more than 20 feet, and depth to a seasonally high water table is more than 5 feet.

The plow layer is very friable to loose loamy sand and is 6 to 8 inches thick. Below the surface layer is loamy sand that is very friable and rapidly permeable. Plant roots can penetrate effectively to a depth of 48 inches or more. Surface runoff is very slow, the rate of infiltration is rapid, and the available moisture capacity is low. The content of organic matter and the supply of available plant nutrients are also low. Soil tilth and response to fertilizer are good, but the effects of fertilizer do not last long.

This soil is best suited to Coastal bermudagrass, bahiagrass, or other perennial vegetation, but it is moderately well suited to corn, grain sorghum, oats, rye, annual lespedeza, crimson clover, and sericea lespedeza. It is generally not suited to cotton, wheat, alfalfa, whiteclover, and dallisgrass. To build up the content of organic matter and to increase the moisture-supplying capacity, all crop residues should be kept on the surface between cropping seasons and on or near the surface, if feasible, while the crop is growing. To maintain moderate yields, add lime every 3 to 5 years and apply a complete fertilizer at least twice during the growing season. A suitable cropping system is—

Two or more years: Coastal bermudagrass. *One year:* Corn or grain sorghum.

Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

Under good management, yields of bermudagrass, bahiagrass, crimson clover, or annual and sericea lespedeza are moderate. For maximum yields, maintain at least 4 inches of plant growth.

CAPABILITY UNIT IVe-1

Sloping soils that have a dominantly loamy surface layer, and a subsoil of yellowish-brown to dark-red clay to sandy clay loam

The soils in this capability unit are deep to moderately deep, well drained, and strongly acid. They are slightly to severely eroded and are on broad ridges and slopes that range from 6 to 15 percent. The thickness of the rooting zone ranges from 20 to 36 inches. Depth to bedrock is commonly more than 5 feet. In places in the severely eroded Habersham soil, depth to bedrock is as little as 2 feet.

The soils in this capability unit are—

Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.
Braddock sandy loam, 10 to 15 percent slopes, eroded.
Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded.
Cecil sandy loam, 10 to 15 percent slopes, eroded.
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
Davidson clay loam, 6 to 10 percent slopes, severely eroded.
Davidson clay loam, 10 to 15 percent slopes, severely eroded.
Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded.
Habersham gravelly loamy sand, 10 to 15 percent slopes.
Lloyd sandy loam, 10 to 15 percent slopes, eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Madison sandy loam, 10 to 15 percent slopes, eroded.
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.
Thurmont loamy sand, 10 to 15 percent slopes.
Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded.

The plow layer of these soils is friable or very friable gravelly loamy sand to clay loam and is 4 to 8 inches thick. The subsoil is firm to friable clay to sandy clay loam and is moderately permeable. The soils that have a surface layer of sandy loam or loamy sand and that are not severely eroded have good tilth. Tilth is fair in the

gravelly soils and also in the severely eroded soils, which have a surface layer of clay loam or sandy clay loam.

Surface runoff is medium to rapid. The rate of infiltration is rapid for the Thurmont soil, which has a surface layer of loamy sand. It is generally moderate for the soils that have a surface layer of sandy loam and slow for the soils that have a surface layer of clay loam or sandy clay loam. The available moisture capacity is moderate to high. The content of organic matter and the supply of available plant nutrients are low to moderate. Response of crops to fertilizer is good to fair.

The hazard of erosion is so severe that the soils in this capability unit are better suited to perennial vegetation than to cultivated crops. Cotton, corn, oats, rye, grain sorghum, pimento peppers, peaches, and vegetables can be grown, however, if the soils are carefully managed or if those crops are rotated with perennial crops. Alfalfa and wheat are suited to all of the soils, except the Appling and Thurmont. All crop residues should be kept on the surface between cropping seasons and on or near the surface whenever practical while the crop is growing. Yields are moderate to high if lime is added every 2 to 4 years and if a complete fertilizer is applied annually, based on the results of soil tests. Suitable cropping systems are—

1. *Two or more years:* Coastal bermudagrass. *One year:* Corn.
2. *Four or more years:* Sericea lespedeza. *One or two years:* Cotton or grain sorghum.

A complete water-disposal system is needed. Terraces can be constructed in areas where the slopes are less than 10 percent. Stripcropping on the contour, however, using strips or bands of row crops alternately with strips of perennials, is more desirable. Terraces or contour rows should drain from the ridges into vegetated outlets. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

This capability unit is suited to practically all of the hay and pasture plants grown locally. For maximum yields and best protection of the soils, maintain a growth of at least 4 inches.

CAPABILITY UNIT IVe-2

Shallow to moderately deep, sloping soils that are moderately to severely eroded

The soils in this capability unit are shallow to moderately deep, well drained to moderately well drained, and strongly to very strongly acid. They are moderately to severely eroded and are on narrow ridges or on short, irregular slopes that range from 2 to 15 percent. The depth of the rooting zone ranges from 10 to 20 inches. In places depth to bedrock is as little as 1 foot.

The soils in this capability unit are—

Musella clay loam, 2 to 10 percent slopes, severely eroded.
Musella clay loam, 10 to 15 percent slopes, eroded.
Vance loamy coarse sand, 10 to 15 percent slopes, eroded.
Vance sandy clay loam, 6 to 10 percent slopes, severely eroded.

The plow layer is clay loam, sandy clay loam, or loamy coarse sand, and it is 4 to 5 inches thick. It is friable, but soil tilth is only fair to poor. In much of the acreage, the subsoil is slowly permeable. The Musella soils have a subsoil of friable, dark-red clay loam, but the subsoil of the Vance soils is very firm, reddish-yellow clay.

Surface runoff is rapid to medium, the rate of infiltration is slow to moderate, and the available moisture capacity is low. The content of organic matter and the supply of available plant nutrients are also low. Response of crops to fertilizer is fair to poor.

Because of the severe hazard of erosion, these soils are better suited to perennial vegetation than to cultivated crops. Grain sorghum, ryegrass, corn, cotton, oats, rye, bermudagrass, sericea lespedeza, and common lespedeza are moderately well suited if the soils are extremely well managed or if those crops are rotated with perennial crops. Good management is required, however, for even moderate yields. Lime should be added every 2 to 4 years, and a complete fertilizer needs to be applied annually. Suitable cropping systems are—

1. *Three or more years:* Coastal bermudagrass. *One year:* Grain sorghum.
2. *Four or more years:* Sericea lespedeza. *One or two years:* Corn or cotton.

A complete water-disposal system is needed. Stripcropping on the contour, using strips or bands of row crops alternately with strips of perennials, is desirable if row crops are to be grown. Contour rows should drain from the ridges to a vegetated outlet. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

Yields of ryegrass, bermudagrass, sericea lespedeza, and common lespedeza grown for hay and pasture are moderate if the soils are well managed. For maximum yields and best protection of the soils, maintain a growth of at least 4 inches.

CAPABILITY UNIT IVe-4

Shallow soils consisting of coarse sandy loam or loamy coarse sand over micaceous or granitic rock

The soils in this capability unit are shallow to bedrock, somewhat excessively drained, and strongly acid. They are on narrow ridges or irregular slopes that range from 6 to 10 percent. The rooting zone is commonly about 10 inches deep, and in some places bedrock is only 1 foot below the surface.

The soils in this capability unit are—

Louisa coarse sandy loam, 6 to 10 percent slopes.
Louisburg loamy coarse sand, 6 to 10 percent slopes.

The plow layer is very friable coarse sandy loam or loamy coarse sand, 5 to 8 inches thick. Below the plow layer, generally, is rapidly permeable, very friable material from weathered granitic or micaceous rock. In some places the rock is not weathered but is hard, and in a few places there is a layer of sandy clay loam that is 4 to 8 inches thick. Surface runoff is medium, and the rate of infiltration is rapid. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. Response of crops to fertilizer is good to fair. Tilth is generally good, but in a few places stones hinder tillage.

Because of their low inherent fertility, the severe hazard of erosion, and the few stones, these soils are better suited to perennial vegetation than to cultivated crops. Grain sorghum, corn, cotton, oats, rye, ryegrass, bermudagrass,

sericea lespedeza, and common lespedeza are moderately well suited if the soils are extremely well managed or if those crops are rotated with perennial crops. Even under good management, however, yields are low to moderate. Lime is needed every 3 to 5 years, and a complete fertilizer should be applied annually. Suitable cropping systems are—

1. *Three or more years:* Coastal bermudagrass. *One year:* Grain sorghum.
2. *Four or more years:* Sericea lespedeza. *One year each:* Cotton and corn.

Stripcropping on the contour, using strips or bands of row crops alternately with strips of perennials, is desirable if row crops are to be grown. Contour rows should drain from the ridges to vegetated outlets. Field borders of a perennial grass should be established. These borders need to be wide enough for machinery to be turned and operated efficiently.

Moderate yields of hay and pasture plants may be expected under good management. For maximum yields and for the maximum protection of the soils, maintain a growth of at least 4 inches.

CAPABILITY UNIT IVw-1

Poorly drained soils on first bottoms or low terraces that are subject to frequent flooding

The soils in this capability unit are poorly drained and are strongly to very strongly acid. They have a shallow rooting zone that is limited by a water table, which may be at the surface several weeks of the year. The soils are nearly level and are on first bottoms or low stream terraces. Depth to bedrock is more than 10 feet.

The soils in this capability unit are—

Alluvial land, wet.
Roanoke silt loam.
Wehadkee silty clay loam.

The surface layer is silty clay loam, silt loam, or loamy sand that is 5 to 7 inches thick. Below the surface layer of the Roanoke and Wehadkee soils is slowly permeable, firm to extremely firm clay to silty clay loam. The soil material below the surface layer is highly variable in Alluvial land, wet.

In the soils of this capability unit, surface runoff is very slow to ponded, the rate of infiltration is slow to medium, and the available moisture capacity is high. The content of organic matter is moderate to high, and the supply of available plant nutrients is low. Response of crops to fertilizer is fair to poor. Most of the time, these soils are too wet for cultivation unless they are drained.

These soils are poorly suited to cultivated crops. They may be used for tall fescue, dallisgrass, bahiagrass, lespedeza, and whiteclover. Yields are moderate if the soils are well managed, but lime is required every 3 to 5 years, and a complete fertilizer is required annually. Ditches are needed to remove excess surface water and to improve internal soil drainage. For maximum yields of hay and pasture plants, growth should be maintained at about 4 inches.

CAPABILITY UNIT Vw-1

Poorly drained soils that have a gray, compact, clayey subsoil and are in upland depressions

The only soil in this capability unit is Worsham coarse sandy loam, 2 to 6 percent slopes. It is poorly drained and strongly acid. The rooting zone is only about 12 inches deep. It is limited by a high water table and by an extremely firm and plastic subsoil. The water table is at the surface several weeks each year. In places depth to bedrock is only about 5 feet. This soil is in slight depressions or near the heads of drains. Slopes range from 2 to 6 percent.

The surface layer is very friable coarse sandy loam, and the subsoil is slowly permeable, extremely firm clay. Surface runoff is ponded; the rate of infiltration and the available moisture capacity are moderate. The content of organic matter is medium, and the supply of available plant nutrients is low. Soil tilth and the response of crops to fertilizer are poor.

This soil is moderately well suited to pasture plants, such as tall fescue, dallisgrass, annual lespedeza, and whiteclover. Yields are only low to moderate, even under good management. Lime is needed every 3 to 5 years, and a complete fertilizer should be applied annually.

Ditches are needed to remove excess surface water, to improve internal soil drainage, and to intercept and divert seepage water from higher areas.

CAPABILITY UNIT VIe-2

Dominantly strongly sloping or very severely eroded soils that have a subsoil of sandy clay loam to clay

The soils in this capability unit are deep to moderately deep, somewhat poorly drained to somewhat excessively drained, and strongly to very strongly acid. Weathered rock near the surface limits the rooting zone of the very severely eroded soils to 18 to 24 inches. Erosion is slight to very severe. These soils are on steep ridges or lower slopes that range from 6 to 25 percent.

The soils in this capability unit are—

Appling-Gullied land complex, 6 to 10 percent slopes.
Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
Braddock sandy loam, 15 to 25 percent slopes, eroded.
Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil-Gullied land complex, 6 to 10 percent slopes.
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
Colfax loamy coarse sand, 6 to 10 percent slopes.
Colfax loamy coarse sand, 6 to 10 percent slopes, eroded.
Davidson loam, 15 to 25 percent slopes, eroded.
Lloyd-Gullied land complex, 6 to 10 percent slopes.
Lloyd-Gullied land complex, 10 to 15 percent slopes.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Madison sandy loam, 15 to 25 percent slopes, eroded.
Madison-Gullied land complex, 6 to 10 percent slopes.
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.

The texture of the surface layer ranges from loamy coarse sand to clay. The subsoil in most of the acreage is friable to firm clay to sandy clay loam that is moderately permeable. Surface runoff is rapid on all except the Colfax soils, but in those soils it is slow to medium. The rate of infiltration is moderate for those soils that are slightly to moderately eroded and slow for the others. The available moisture capacity is generally moderate, but it is low in the very severely eroded soils. The content of organic matter and the supply of available plant nutrients are low. Soil tilth and the response of crops to fertilizer are generally poor.

These soils are generally not suited to cultivated crops, and they are only moderately well suited to hay and pasture. They are probably best suited to trees.

These soils are moderately well suited to bermudagrass, sericea lespedeza, and kudzu. The Colfax soils are also moderately well suited to tall fescue and whiteclover. When used for most hay or pasture crops, these soils need lime every 2 to 4 years and a complete fertilizer annually. Legumes, however, need nitrogen only at the time of planting. For maximum yields and for maximum protection of the soils, the plants grown for hay and pasture should be managed to maintain a growth of at least 4 inches.

CAPABILITY UNIT VIe-3

Shallow soils consisting of coarse sandy loam or loamy coarse sand over micaceous or granitic rock

The soils in this capability unit are somewhat excessively drained, strongly acid, and shallow to bedrock. Weathered or hard rock limits the rooting zone to about 10 inches. The soils are on narrow ridges or irregular slopes of 10 to 15 percent.

The soils in this capability unit are—

Louisa coarse sandy loam, 10 to 15 percent slopes.
Louisburg loamy coarse sand, 10 to 15 percent slopes.

The surface layer is very friable coarse sandy loam to loamy coarse sand. Below the surface layer generally is weathered micaceous or granitic rock. In some places hard granitic rock is within 1 foot of the surface. Surface runoff is medium, and the rate of infiltration is rapid. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. Response of crops to fertilizer is fair, and soil tilth is good, except where stones hinder cultivation.

These soils are generally not suited to cultivated crops, and they are only moderately well suited to hay crops and pasture. They are better suited to trees.

These soils are moderately well suited to bermudagrass and sericea lespedeza. Yields are low to moderate if the soils are well managed. When used for most hay or pasture crops, these soils need lime every 3 to 5 years and a complete fertilizer annually. Legumes, however, need nitrogen only at the time of planting. For maximum yields and for maximum protection of the soils, plants grown for hay or pasture should be managed to maintain a growth of at least 4 inches.

CAPABILITY UNIT VIe-4

Shallow, severely eroded soils that have a surface layer of clay loam and a subsoil of dark-red clay loam

The only soil in this capability unit is Musella clay loam, 10 to 15 percent slopes, severely eroded. It is well-drained, very strongly acid, and shallow to bedrock. This soil is severely eroded and has irregular slopes of 10 to 15 percent. Weathered or hard basic rock limits the rooting zone to about 12 inches.

The surface layer is friable clay loam and is 4 to 5 inches thick. The subsoil is friable clay that has moderately slow permeability. Surface runoff is rapid, and the rate of infiltration is slow. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. Soil tilth and response of crops to fertilizer are poor.

This soil is generally not suited to cultivated crops, and it is only moderately well suited to hay and pasture. It is probably best suited to trees.

725-013—65——4

This soil is moderately well suited to bermudagrass, sericea lespedeza, and kudzu. Yields are low to moderate under good management. When used for most hay or pasture plants, this soil needs lime every 2 or 3 years and a complete fertilizer annually. Legumes, however, need nitrogen only at the time of planting. For maximum yields and for maximum protection of the soils, the hay and pasture plants should be managed to maintain a growth of at least 4 inches.

CAPABILITY UNIT VIs-1

Shallow, sloping soils that are stony or cobbly

The soils in this capability unit are somewhat excessively drained, strongly acid, and stony or cobbly. The thickness of the rooting zone ranges from 6 to 20 inches and is limited by rock. The slope ranges from 6 to 15 percent.

The soils in this capability unit are—

Cobbly and gravelly land, sloping.
Cobbly and gravelly land, strongly sloping.
Louisburg stony loamy coarse sand, 6 to 10 percent slopes.

The surface layer of these soils contains many stones, or a high proportion of cobbles and pebbles. The soil material below the surface layer is also stony, cobbly, or gravelly. Surface runoff is slow to medium, and the rate of infiltration is rapid. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. The stones and cobbles seriously hinder the use of machinery. Because of the stones and cobbles, the low available moisture capacity, and the low yields, these soils are probably best suited to trees.

These soils are moderately well suited to bermudagrass and sericea lespedeza. If the soils are well managed, low to moderate yields may be expected. When these soils are used for bermudagrass and sericea lespedeza, lime is needed every 3 to 5 years, and a complete fertilizer is needed every year. For maximum yields the soils should be managed to maintain a growth of at least 4 inches.

CAPABILITY UNIT VIIe-1

Severely or very severely eroded, shallow to moderately deep soils

The soils in this capability unit are somewhat excessively drained and strongly acid. They have a rooting zone that is only 12 to 20 inches deep, because it is limited by weathered rock. These soils are on long, steep hillsides and on short, broken slopes.

The soils in this capability unit are—

Cecil-Gullied land complex, 10 to 15 percent slopes.
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
Madison-Gullied land complex, 10 to 15 percent slopes.
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.

The surface layer of these soils is friable to firm clay or clay loam that is 3 to 5 inches thick. The subsoil is friable to firm clay to clay loam and is moderately permeable. Surface runoff is rapid, and the rate of infiltration is slow. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. Soil tilth and response to fertilizer are poor.

The steep slopes, severe erosion, and poor tilth make these soils poorly suited to cultivated crops or to hay and pasture (fig. 6). They are probably best suited to trees.

Figure 6.—**Low-quality pasture on an area of Madison-Gullied land complex, 10 to 15 percent slopes.**

CAPABILITY UNIT VIIe-2

Shallow, sloping soils that are dominantly stony or cobbly

The soils in this capability unit are somewhat excessively drained and strongly acid, and they have a shallow rooting zone because of rocks. These soils are on sharp ridges or on the steep side slopes of Pine Mountain.

The soils in this capability unit are—

Cobbly and gravelly land, steep.
Louisa coarse sandy loam, 15 to 25 percent slopes.
Louisburg stony loamy coarse sand, 10 to 15 percent slopes.
Louisburg stony loamy coarse sand, 15 to 25 percent slopes.
Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded.

The surface layer of these soils is variable in texture, and it contains many stones or a high proportion of cobbles and pebbles. Below the surface layer, the soil material is generally stony, cobbly, or gravelly. Surface runoff is medium, and the rate of infiltration is rapid in all except the Musella soils. On the Musella soils, the rate of infiltration is slow. The available moisture capacity, the content of organic matter, and the supply of available plant nutrients are low. Stones and cobbles seriously hinder the use of machinery needed for tillage.

The steep slopes, low moisture capacity, and the stones or cobbles make these soils poorly suited to cultivated crops or pasture. They are probably best suited to trees.

CAPABILITY UNIT VIIe-4

Gullied land

The only soil in this capability unit is Gullied land. More than half the land surface is cut by deep or shallow gullies. Many of the gullies have penetrated into the weathered rock. The soil material that remains between the gullies is commonly red clay or clay loam that is very strongly acid. In a few places there is enough soil material left to identify soils of the Madison, Cecil, or Lloyd series.

In some places the rooting zone is negligible, and in other places it is about 12 inches deep. Surface runoff is rapid, the rate of infiltration is slow, and the available moisture capacity is very low. The content of organic matter and the supply of available plant nutrients are low.

Generally, plants make extremely slow growth on this land type. Great care and skill are needed to establish a cover of plants. The protection of a mulch of hay or other material is needed to help establish vegetation.

CAPABILITY UNIT VIIIs-1

Rock land

This miscellaneous land type has rock outcrops over more than half the acreage. In the rest of the acreage the soil material is coarse textured, and in places it is as much as 12 inches thick.

Generally, plants on areas of Rock land cannot make continuous growth. The areas can be managed to provide a small amount of food and cover for wildlife. They can also be developed as recreational areas.

Estimated Yields

Table 5 gives estimates of yields that can be expected for the principal soils of the county under defined management practices. Yields are given for each soil under two levels of management. In columns A are yields to be expected under management commonly practiced in the county. In columns B are yields obtained by farmers who used improved management practices, or yields obtained by research workers. The figures are based on records of yields on individual farms, on yields obtained when long-term experiments were conducted, and on estimates made by agronomists who had experience with the crops and with the soils.

Estimated yields have not been given for certain crops on some of the soils. Where dashes have been entered in the column instead of figures, expectable yields are considered to be too low for that particular crop on the soil indicated, or management requirements are too exacting to warrant growing the crop.

Estimated yields for peaches and for pimento peppers have been given for the B columns only, because those crops require large investments of capital and labor and commonly receive excellent management. The yields shown for peaches are based on a stand of 80 to 100 mature trees per acre of a high-yielding variety, such as Elberta. These estimates do not reflect any losses by spring freezing, because this hazard varies too greatly from year to year. The following paragraphs give some special practices employed for particular crops to obtain the yields given in columns B.

Corn.—Management requirements for this crop vary among the different soils because the soils differ in productivity and in available moisture capacity.

For soils on which an estimated yield of 60 bushels or more per acre of corn is shown in column B, the following treatments are required: Apply 70 to 100 pounds of nitrogen (N) and 60 to 70 pounds each of phosphoric acid (P_2O_5) and potash (K_2O); plant enough seed to produce 10,000 to 15,000 plants per acre; turn under all crop residue, or grow a winter cover crop and turn it under.

For soils on which an estimated yield of 35 to 55 bushels per acre of corn is shown in column B, the following treatments are required: Apply 32 to 70 pounds of nitrogen (N) and 36 to 60 pounds each of phosphoric acid (P_2O_5) and potash (K_2O); plant enough seed to produce 8,000 to 10,000 plants per acre; turn under all crop residue, or grow a winter cover crop and turn it under.

TABLE 5.—*Estimated yields per acre of the principal crops under two levels of management*

[Yields in columns A are to be expected under common management practices; those in columns B are yields to be expected under improved management practices that do not include irrigation. Absence of a figure indicates crop is not commonly grown]

Soil	Corn		Cotton (lint)		Oats		Sericea lespedeza hay		Bermuda-grass pasture		Fescue and whiteclover		Oats, rye-grass, and crimson clover		Peaches	Peppers
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Bu.*	*Cwt.*
Alluvial land	35	75	----	----	35	65	1. 7	3. 0	180	240	100	150	90	130	----	----
Alluvial land, moderately wet (drained)	30	55	----	----	----	----	----	----	150	180	100	150	90	130	----	----
Alluvial land, wet	----	----	----	----	----	----	----	----	----	----	80	150	60	90	----	----
Altavista fine sandy loam, 2 to 6 percent slopes	30	50	350	500	35	60	1. 0	1. 5	180	240	75	125	100	130	----	50
Appling loamy sand, 2 to 6 percent slopes	30	50	350	550	35	60	1. 0	1. 5	180	210	70	115	100	120	500	65
Appling loamy sand, 2 to 6 percent slopes, eroded	30	50	350	550	35	60	1. 0	1. 5	180	210	70	115	100	120	500	65
Appling loamy sand, 6 to 10 percent slopes, eroded	25	45	300	500	30	55	1. 0	1. 5	180	210	70	115	90	100	450	50
Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	20	40	250	400	25	45	1. 0	1. 5	120	150	65	100	70	85	400	----
Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	----	----	----	----	----	----	. 8	1. 0	100	150	60	90	----	----	----	----
Appling-Gullied land complex, 6 to 10 percent slopes	----	----	----	----	----	----	. 8	1. 0	100	120	60	90	----	----	----	----
Augusta sandy loam	35	55	----	----	15	----	----	----	150	210	100	150	100	130	----	----
Braddock sandy loam, 2 to 6 percent slopes, eroded	35	60	400	650	30	60	1. 7	3. 3	180	240	90	135	90	120	500	65
Braddock sandy loam, 6 to 10 percent slopes, eroded	30	55	400	600	30	55	1. 7	3. 3	150	210	90	135	80	110	450	50
Braddock sandy loam, 10 to 15 percent slopes, eroded	30	50	350	500	25	50	1. 5	3. 0	150	210	80	120	80	110	400	30
Braddock sandy loam, 15 to 25 percent slopes, eroded	----	----	----	----	----	----	1. 5	2. 5	150	210	80	120	70	100	----	----
Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded	30	50	350	500	25	50	1. 5	3. 0	150	210	80	120	70	105	----	25
Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded	----	----	----	----	----	----	1. 5	2. 0	120	150	70	90	70	90	----	----
Buncombe loamy sand	25	50	----	----	----	----	----	----	100	150	----	----	70	90	----	----
Cecil sandy loam, 2 to 6 percent slopes	35	60	400	650	30	60	1. 7	3. 3	180	240	90	135	90	120	500	65
Cecil sandy loam, 2 to 6 percent slopes, eroded	35	60	350	600	30	60	1. 7	3. 3	180	240	90	135	90	120	500	65
Cecil sandy loam, 6 to 10 percent slopes	30	55	300	550	30	55	1. 7	3. 3	150	210	90	135	80	110	500	50
Cecil sandy loam, 6 to 10 percent slopes, eroded	30	55	300	500	30	55	1. 7	3. 3	150	210	90	135	80	110	450	50
Cecil sandy loam, 10 to 15 percent slopes, eroded	30	50	350	550	25	50	1. 5	3. 0	150	210	80	120	80	110	400	30
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	25	45	350	500	30	55	1. 5	3. 0	150	210	80	120	75	120	450	40
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	20	35	300	400	25	50	1. 5	3. 0	150	210	70	105	60	90	400	----
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	----	----	----	----	----	----	1. 5	2. 0	120	180	65	90	----	----	----	----
Cecil-Gullied land complex, 6 to 10 percent slopes	----	----	----	----	----	----	1. 0	1. 5	120	180	65	90	----	----	----	----
Cecil-Gullied land complex, 10 to 15 percent slopes	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chewacla silt loam	40	70	----	----	----	----	----	----	150	210	100	150	90	130	----	----

See footnote at end of table.

TABLE 5.—*Estimated yields per acre of the principal crops under two levels of management*—Continued

[Yields in columns A are to be expected under common management practices; those in columns B are yields to be expected under improved management practices that do not include irrigation. Absence of a figure indicates crop is not commonly grown]

Soil	Corn		Cotton (lint)		Oats		Sericea lespedeza hay		Bermudagrass pasture		Fescue and whiteclover		Oats, ryegrass, and crimson clover		Peaches	Peppers
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre days* [1]	*Cow-acre-days* [1]	*Bu.*	*Cwt.*
Cobbly and gravelly land, sloping									150	210						
Cobbly and gravelly land, strongly sloping									120	210						
Cobbly and gravelly land, steep																
Colfax loamy coarse sand, 2 to 6 percent slopes	25	40	250	500	35	65	1.0	1.5	120	180	90	130	70	110		
Colfax loamy coarse sand, 6 to 10 percent slopes	20	30	200	300	30	45	.8	1.0	120	180	90	130	70	110		
Colfax loamy coarse sand, 6 to 10 percent slopes, eroded	20	30	200	300	30	45	.8	1.0	120	180	90	130	70	110		
Colfax sandy loam, overwash, 2 to 6 percent slopes	15	25							70	120	80	120				
Davidson clay loam, 2 to 6 percent slopes, severely eroded	25	40	300	400	35	60	1.7	3.3	150	240	90	135	90	135	450	30
Davidson clay loam, 6 to 10 percent slopes, severely eroded	20	35	250	350	30	55	1.5	2.5	150	210	80	120	80	120	400	25
Davidson clay loam, 10 to 15 percent slopes, severely eroded							1.0	2.0	100	120	60	90				
Davidson loam, 2 to 6 percent slopes, eroded	30	45	300	450	35	65	1.7	3.3	150	240	90	135	90	135	500	40
Davidson loam, 6 to 10 percent slopes, eroded	25	40	300	400	35	60	1.7	3.3	150	240	90	130	90	135	500	35
Davidson loam, 15 to 25 percent slopes, eroded							1.5	2.5	150	210	70	105				
Gullied land																
Habersham gravelly loamy sand, 2 to 6 percent slopes	30	55	400	500	30	55	1.7	3.0	150	210	80	125	100	120	500	45
Habersham gravelly loamy sand, 6 to 10 percent slopes	25	50	350	450	30	50	1.7	3.0	150	210	80	125	100	120	450	35
Habersham gravelly loamy sand, 10 to 15 percent slopes	20	40	300	400	30	40	1.5	3.0	120	210	70	90	90	110	400	30
Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded	20	30	300	400	30	40	1.5	2.0	120	210	60	80	80	100	400	
Iredell sandy loam, 2 to 6 percent slopes, eroded	20	25	350	500	20	35	1.0	1.5	120	180	65	95	50	70		
Lloyd clay loam, 2 to 6 percent slopes, severely eroded	25	40	350	450	30	60	1.7	3.3	150	210	85	125	80	130	450	45
Lloyd clay loam, 6 to 10 percent slopes, severely eroded	25	40	250	400	30	55	1.7	3.3	150	210	85	125	75	120	400	25
Lloyd clay loam, 10 to 15 percent slopes, severely eroded	20	35	200	350	25	50	1.5	2.5	150	210	80	115	75	115		
Lloyd clay loam, 15 to 25 percent slopes, severely eroded									100	150	70	105				
Lloyd-Gullied land complex, 6 to 10 percent slopes	20	30	200	300	25	40	1.5	2.0	120	180	75	110	70	100		
Lloyd-Gullied land complex, 10 to 15 percent slopes							1.0	1.5	120	180	70	105				
Lloyd sandy loam, 2 to 6 percent slopes, eroded	30	60	400	550	30	60	1.7	3.3	180	240	90	135	80	130	500	55
Lloyd sandy loam, 6 to 10 percent slopes, eroded	30	55	350	500	30	60	1.7	3.3	180	240	90	135	80	130	500	40
Lloyd sandy loam, 10 to 15 percent slopes, eroded	20	40	300	400	30	40	1.5	3.0	150	210	80	115	80	120	400	30
Local alluvial land	40	75	500	600	40	70	2.0	3.3	180	240	100	150	90	135	500	65
Louisa coarse sandy loam, 6 to 10 percent slopes	20	30	300	350	30	35	1.5	2.0	100	120	80	100	75	105		20
Louisa coarse sandy loam, 10 to 15 percent slopes							1.0	1.5	P 100	120	60	85				

See footnote at end of table.

TABLE 5.—*Estimated yields per acre of the principal crops under two levels of management*—Continued

[Yields in columns A are to be expected under common management practices; those in columns B are yields to be expected under improved management practices that do not include irrigation. Absence of a figure indicates crop is not commonly grown]

Soil	Corn		Cotton (lint)		Oats		Sericea lespedeza hay		Bermudagrass pasture		Fescue and whiteclover		Oats, ryegrass, and crimson clover		Peaches	Peppers
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre days* [1]	*Cow-acre-days* [1]	*Bu.*	*Cwt.*
Louisa coarse sandy loam, 15 to 25 percent slopes							1.0	1.5	100	120	60	85				
Louisburg loamy coarse sand, 2 to 6 percent slopes	20	30	200	350	20	30	1.0	1.5	100	120	55	80	75	105		20
Louisburg loamy coarse sand, 6 to 10 percent slopes	15	25	200	300	20	30	1.0	1.5	100	120	50	70	75	95		20
Louisburg loamy coarse sand, 10 to 15 percent slopes							1.0	1.5	100	120	50	70				
Louisburg stony loamy coarse sand, 6 to 10 percent slopes																
Louisburg stony loamy coarse sand, 10 to 15 percent slopes																
Louisburg stony loamy coarse sand, 15 to 25 percent slopes																
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	35	55	400	600	30	60	1.7	3.0	150	210	80	120	75	120	450	30
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	30	50	350	450	25	50	1.5	3.0	150	210	70	105	60	90	400	
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded							1.5	2.0	120	180	65	90				
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded																
Madison-Gullied land complex, 6 to 10 percent slopes							1.0	1.5	120	180	65	90				
Madison-Gullied land complex, 10 to 15 percent slopes																
Madison sandy loam, 2 to 6 percent slopes, eroded	35	60	450	650	30	60	1.7	3.3	180	240	90	135	90	120	500	65
Madison sandy loam, 6 to 10 percent slopes, eroded	35	55	400	600	30	60	1.7	3.3	180	240	90	135	90	120	500	45
Madison sandy loam, 10 to 15 percent slopes, eroded	30	50	350	500	25	50	1.5	3.0	150	210	80	120	80	110	400	35
Madison sandy loam, 15 to 25 percent slopes, eroded							1.5	2.5	150	210	70	105				
Musella clay loam, 2 to 10 percent slopes, severely eroded	15	20	250	350	20	35	1.5	2.0	120	150	60	80	80	120		20
Musella clay loam, 10 to 15 percent slopes, eroded							1.5	2.0	100	150	50	70	70	80		
Musella clay loam, 10 to 15 percent slopes, severely eroded							1.0	1.5	100	120	50	70				
Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded																
Roanoke silt loam											80	150	60	90		
Rock land																
Thurmont loamy sand, 2 to 6 percent slopes	30	50	350	500	35	60	1.0	1.5	180	210	70	115	100	120	500	45
Thurmont loamy sand, 6 to 10 percent slopes	30	50	350	500	30	55	1.0	1.5	180	210	70	115	90	100	450	30
Thurmont loamy sand, 10 to 15 percent slopes	20	40	300	400	25	50	1.0	1.5	120	180	65	105	70	85	400	30
Vance loamy coarse sand, 2 to 6 percent slopes, eroded	20	30	300	400	20	35	1.0	1.5	150	180	75	105	80	110		30
Vance loamy coarse sand, 6 to 10 percent slopes, eroded	20	30	250	350	20	35	1.0	1.5	120	150	75	105	70	90		25
Vance loamy coarse sand, 10 to 15 percent slopes, eroded	15	25	200	300	15	30	1.0	1.5	120	180	65	105	60	80		7

See footnote at end of table.

TABLE 5.—*Estimated yields per acre of the principal crops under two levels of management*—Continued

[Yields in columns A are to be expected under common management practices; those in columns B are yields to be expected under improved management practices that do not include irrigation. Absence of a figure indicates crop is not commonly grown]

Soil	Corn		Cotton (lint)		Oats		Sericea lespedeza hay		Bermudagrass pasture		Fescue and whiteclover		Oats, ryegrass, and crimson clover		Peaches	Peppers
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B
	Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Cow acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre days* [1]	*Cow-acre-days* [1]	*Bu.*	*Cwt.*
Vance sandy clay loam, 6 to 10 percent slopes, severely eroded	----	----	----	----	----	----	.8	1.0	120	150	70	100	70	90	----	----
Wehadkee silty clay loam	----	----	----	----	----	----	----	----	50	70	80	125	60	90	----	----
Wickham fine sandy loam, 2 to 6 percent slopes, eroded	40	70	350	600	35	65	1.7	3.3	180	240	90	135	90	120	500	65
Wickham fine sandy loam, 6 to 10 percent slopes, eroded	35	60	300	550	35	65	1.7	3.3	150	210	90	135	80	110	450	50
Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded	30	50	250	450	20	45	1.5	3.0	150	210	70	105	60	90	400	20
Worsham coarse sandy loam, 2 to 6 percent slopes	----	----	----	----	----	----	----	----	50	70	80	125	60	90	----	----

[1] Cow-acre-days expresses the carrying capacity of pasture. As used here, it is the product of the number of animal units carried per acre multiplied by the number of days during the year that animals can be grazed without injury to the pasture. An animal unit is 1 cow, steer, or horse, 5 hogs, 7 sheep, or 7 goats.

For soils on which an estimated yield of 15 to 30 bushels per acre of corn is indicated in column B, the following treatments are required: Apply 16 to 32 pounds of nitrogen (N) and 16 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O); plant enough seed to produce 5,000 to 8,000 plants per acre; turn under all crop residue, or grow a winter cover crop and turn it under.

Cotton.—Management requirements for this crop vary among the different soils because the soils differ in productivity and in available moisture capacity.

For soils on which an estimated yield of 500 pounds or more of cotton per acre is shown in column B, the following treatments are required: Apply 60 to 96 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O); plant enough seed to produce 24,000 to 30,000 plants per acre; provide effective control of insects.

For soils on which an estimated yield of 300 to 450 pounds of lint cotton per acre is shown in column B, the following treatments are required: Apply 36 to 60 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O); plant enough seed to produce 16,000 to 25,000 plants per acre; provide effective control of insects.

For soils on which an estimated yield of 200 to 250 pounds of lint cotton per acre is shown in column B, the following treatments are required: Apply 12 to 36 pounds of nitrogen (N) and 16 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O); plant enough seed to produce 12,000 to 18,000 plants per acre; provide effective control of insects.

Oats.—For soils on which an estimated yield of 50 bushels or more of oats per acre is shown in column B, the following treatments are required: Apply 16 to 24 pounds of nitrogen (N) and 48 to 72 pounds each of phosphoric acid (P_2O_5), and potash (K_2O) per acre at the time of planting; apply 32 to 64 pounds of nitrogen per acre late in winter; provide adequate control of plant diseases.

For soils on which an estimated yield of 25 to 45 bushels of oats per acre is shown in column B, the following treatments are required: Apply 8 to 16 pounds of nitrogen (N) and 24 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) per acre at the time of planting; apply 16 to 32 pounds of nitrogen late in winter; provide adequate control of plant diseases.

Soils on which the estimated yield is 20 bushels or less per acre commonly receive little fertilizer.

Sericea lespedeza.—For soils on which an estimated yield of 2 tons or more of sericea lespedeza hay per acre is shown in column B, the following treatments are required: Apply 8 to 12 pounds of nitrogen (N), 24 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O), and 1 ton of lime at the time of seeding; apply 48 to 72 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) annually thereafter; apply 1 ton of lime at least 1 year out of every 3, or as needed, according to the results of soil tests.

For soils on which the estimated yield is 1 to 2 tons per acre of sericea lespedeza for hay, the following treatments are required: Apply 8 to 12 pounds of nitrogen (N), 24 to 36 pounds each of phosphoric acid (P_2O_5) and potash (K_2O), and 1 ton of lime at the time of seeding; apply 24 to 48 pounds each of phosphoric acid (P_2O_5) and potash (K_2O) annually thereafter; apply 1 ton of lime at least 1 year out of every 3, or as needed, according to the results of soil tests.

Soils on which the estimated yield is less than 1 ton of sericea lespedeza for hay commonly receive little or no fertilizer or lime after planting.

Pastures.—For soils on which the estimated yield per acre shown in column B is 180 cow-acre-days or more for bermudagrass, 120 cow-acre-days or more for tall fescue and clover, or 120 cow-acre-days for oats, ryegrass, and crimson clover, the following treatments are required per acre: Apply 48 to 96 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O); apply 1 ton of lime every 3 years, or as needed, according to the results of soil tests; mow to control weeds and excess growth.

For soils on which the estimated yield is 100 to 150 cow-acre-days for bermudagrass pasture, 80 to 115 cow-acre-days for pasture of tall fescue and clover, or 80 to 115 cow-acre-days for pasture of oats, ryegrass, and crimson clover, the following treatments are required per acre: Apply 24 to 48 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O); apply 1 ton of lime every 3 years, or as needed, according to the results of soil tests; mow to control weeds and excess growth.

Soils on which estimated yields are less than those stated commonly have received little or no fertilizer, lime, or other recommended treatment after planting.

Peaches.—Management requirements for growing peaches vary because the soils differ in tilth, intake of water, general productivity, and available moisture capacity. For the estimated yields given in column B, the following treatments are required per acre: Apply about 80 pounds of nitrogen (N), and 96 pounds each of phosphoric acid (P_2O_5) and potash (K_2O); grow 80 to 100 trees per acre; provide adequate control of insects and diseases.

Pimento peppers.—Management requirements for pimento peppers vary because the soils differ in general productivity, available moisture capacity, soil tilth, and intake of water. For the estimated yields given in column B, the following per acre treatments are required: Apply 60 to 120 pounds each of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O); set out 5,000 to 8,000 plants per acre; provide adequate control of insects and diseases.

Climate and Crops [5]

Both the soils and the climate of Meriwether County are well suited to a number of different crops, and for most crops, there is a long planting season. The length of the average growing season is about 230 days. The average date of the last freeze in spring is about March 25, and that of the first freeze in fall is usually about the middle of November. The probability of a freeze of specified intensity occurring after a given date in spring and before a given date in fall is shown in table 6.

The growing season is long enough that cotton, corn, grain sorghum, millet, tomatoes, watermelons, beans, potatoes, and many other crops can be planted over a period of many weeks and still have enough time to mature. The winters are mild enough that fall-sown small grains survive well and provide grazing for livestock. Fescue, clovers, small grains, and certain other plants make some growth in winter when the temperature goes above 40° F. There are normally enough low-temperature hours in winter to meet the miniumum requirements for a dormant season for peaches and similar crops. Freezes in spring, however, are a hazard to peaches. In some orchards a crop failure as the result of a freeze may be expected every 3 to 5 years.

TABLE 6.—*Probabilities of last freezing temperature in spring and first freezing temperature in fall*

Probability	Dates for given probability and temperature		
	24° F. or colder	28° F. or colder	32° F. or colder
Spring:			
1 year in 10, later than	Mar. 13	Mar. 24	Apr. 10
2 years in 10, later than	Mar. 8	Mar. 18	Apr. 3
5 years in 10, later than	Feb. 20	Mar. 8	Mar. 25
Fall:			
1 year in 10, earlier than	Nov. 21	Nov. 10	Oct. 30
2 years in 10, earlier than	Nov. 23	Nov. 15	Nov. 3
5 years in 10, earlier than	Dec. 11	Nov. 24	Nov. 13

The average annual rainfall is about 49 inches, and the rainfall is fairly well distributed throughout the year. The amount of rainfall is usually adequate for crops and other purposes, but there is an occasional damaging dry spell. Dry spells occur especially in autumn, when long periods of mild, sunny weather are common. March, which has an average of almost 6 inches of precipitation, is usually the wettest month. October, which has only slightly more than 2 inches, is the driest. The amount of annual rainfall has ranged from more than 70 inches, received in 1929, to less than 30 inches, received in 1954. The amount of rainfall during any 1 month has ranged from 16.53 inches, received in March 1929, to 0.05 of an inch, received in October 1939. Rains that total 1 inch or more in a 24-hour period occur about 15 times a year. They occur during any month but are more likely to occur in March and September and less likely to occur in October and November. Tables 7, 8, and 9 provide supplementary data on the amount and distribution of rainfall in this county.

ESTIMATING PROBABILITY OF DROUGHT DAMAGE TO A CROP

Lists A and B can be used with table 10 to judge the likelihood that drought will damage a particular crop on a specified soil. They may also be useful in planning supplemental irrigation. List A groups the commonly grown crops, according to normal rooting depth. List B gives the estimated capacity of each soil to hold moisture to a specified depth. Table 10 shows the probability of drought days, by months, on soils of 1-inch, 2-inch, 3-inch, 4-inch, and 5-inch moisture-storage capacity.

To use this information, turn to list A and find the name of the crop you wish to grow and the average depth of its root zone. Then, refer to list B for the soil type on which this crop is to be grown and note the moisture-storage capacity *to the rooting depth.* Next, check table 10 to find the probability of drought for this moisture-storage capacity.

[5] HORACE S. CARTER, State climatologist, U.S. Weather Bureau, Athens, Ga., assisted with the preparation of this section.

TABLE 7.—*Average number of days per year, by months, that have rainfall equal to or greater than the stated amounts*

[Based on records at Woodbury, Ga., for the 10-year period 1951 through 1960]

Rainfall equal to or greater than—	Average number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Inches													
0.10	5	7	8	6	6	5	9	6	6	4	5	6	73
.25	4	6	6	5	5	4	7	4	4	2	3	5	55
.50	3	4	4	3	3	2	4	2	3	2	2	3	35

TABLE 8.—*Total number of days in 10 years, by months, that have rainfall equal to or greater than the stated amounts*

[Based on records at Woodbury, Ga., for the 10-year period 1951 through 1960]

Rainfall equal to or greater than—	Total number of days in—												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-year period
Inches													
1	10	15	18	14	15	10	16	9	20	6	5	9	147
2	1	0	4	2	2	2	2	1	7	0	1	2	24
3	0	0	1	1	0	0	1	1	2	0	1	1	8
4	0	0	0	0	0	0	0	0	1	0	1	1	3

TABLE 9.—*Total number of 2-, 4-, and 6-week periods in 10 years with no day having 0.25 inch or more precipitation*

[Based on records at Woodbury, Ga., for the 10-year period 1951 through 1960. Where the same dry spell extends from 1 month into the next, it is counted for the month having the most days in the dry spell]

Periods equal to or greater than—	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	10-year period
2 weeks	6	4	2	8	7	6	1	7	8	9	7	5	70
4 weeks	1	0	0	1	3	1	0	0	1	4	1	0	12
6 weeks	0	0	0	0	0	0	0	0	1	2	1	0	4

Suppose you wish to grow garden vegetables on Davidson loam, and you want to know how likely it is that there will be enough dry days in July to retard the growth of the vegetables. From list A you find that vegetables have most of their roots in the uppermost 12 inches of the soil; therefore, in list B, you look under "12 inches," and find that the Davidson soils hold approximately 1 inch of available moisture to a depth of 12 inches. Then turn to table 10, find the column headed "1 inch," and read under "Probability" the chances that there will be days when drought will damage vegetables. The chances are 5 in 10 that in July there will be at least 13 drought days, 3 in 10 that there will be at least 17 drought days, 2 in 10 that there will be 19 drought days, and only 1 in 10 that there will be 21 drought days.

Or, again, suppose you want to know the likelihood of dry days in June that will damage peaches on Madison sandy loam. Peach trees have most of their roots in the uppermost 36 inches of the soil (list A), and to that depth (list B), Madison sandy loam holds approximately 5 inches of available water. By referring to table 10, under the column headed "5 inches," you find that in June the probability is that 3 years in 10 there will be at least 7 days during which peaches will be damaged because of insufficient water.

LIST A: Normal Root Zone for Common Crops on Permeable Soils

Eighty percent of roots at a depth not exceeding—

12 inches	*24 inches*	*36 inches*
Grasses (annual).	Cantaloups.	Alfalfa.
Lespedeza (annual).	Clover (white and crimson).	Fruit trees.
Most garden vegetables.	Corn.	Kudzu.
Small grains.	Cotton.	Lespedeza, sericea.
	Grain sorghum.	
	Grasses (perennial).	
	Lima beans.	
	Pimento peppers.	
	Tomatoes.	

LIST B: Total Available Moisture

Moisture-storage capacity in inches of water stored in the soil from the surface to a depth of—

Soil type:[1]	*12 inches*	*24 inches*	*36 inches*
Alluvial land	2	3	4
Altavista fine sandy loam	1	3	5
Appling loamy sand	1	3	5
Augusta sandy loam	2	4	5
Braddock sandy loam	2	3	5
Buncombe loamy sand	1	2	3
Cecil sandy clay loam	1	3	5
Cecil sandy loam	2	3	5
Chewacla silt loam	2	3	5
Davidson clay loam	1	3	4
Davidson loam	1	2	4
Habersham gravelly loamy sand	1	3	5
Lloyd clay loam	1	3	4
Lloyd sandy loam	2	3	5
Local alluvial land	2	3	5
Madison sandy clay loam	1	3	5
Madison sandy loam	2	3	5
Roanoke silt loam	2	3	4
Thurmont loamy sand	1	3	5
Vance loamy coarse sand	1	3	4
Wickham fine sandy loam	2	3	5

[1] Only those soil types suitable for irrigation are listed.

Woodland [6]

This section discusses general practices needed for protecting woodland. It also describes the woodland suitability groups of soils in Meriwether County. This information will help the owner of woodland, who wishes to make changes in land use or who wishes to improve his woodland.

About 68 percent of the total land area of the county is wooded. About 15 percent of this acreage is owned by pulp and paper companies, and less than 1 percent is owned by the county and by municipalities. Most of the rest is privately owned. Most of the original timber was cut before 1900.

Trees that grow extensively on the uplands are loblolly and shortleaf pines, which are commercially important in this county. In some places the trees in the stand are scattered, but in other places the stand is well stocked. In past years the Pine Mountain area, along the southern border of the county, supported stands containing much longleaf pine. Now, most of this area has reverted to scrub hardwoods, as have several other areas throughout the county (fig. 7). The trees along streams are mostly low-grade hardwoods.

[6] T. A. McFARLAND, forester, Soil Conservation Service, assisted in the preparation of this section.

TABLE 10.—*Probability of drought days on soils of different moisture-storage capacities*

Month [1]	Probability	Minimum drought days if soil has a moisture-storage capacity [2] of—				
		1 inch	2 inches	3 inches	4 inches	5 inches
April	1 in 10	15	0	0	0	0
	2 in 10	12	0	0	0	0
	3 in 10	10	0	0	0	0
	5 in 10	7	0	0	0	0
May	1 in 10	24	21	15	8	0
	2 in 10	21	17	10	0	0
	3 in 10	19	14	7	0	0
	5 in 10	15	9	0	0	0
June	1 in 10	24	23	22	20	15
	2 in 10	21	20	18	15	10
	3 in 10	19	17	16	12	7
	5 in 10	16	13	11	7	0
July	1 in 10	21	19	18	18	17
	2 in 10	19	16	14	13	11
	3 in 10	17	13	11	9	6
	5 in 10	13	8	6	0	0
August	1 in 10	22	20	18	17	16
	2 in 10	20	16	13	12	11
	3 in 10	17	12	9	8	7
	5 in 10	13	8	0	0	0
September	1 in 10	24	23	21	19	18
	2 in 10	21	19	16	14	12
	3 in 10	19	16	13	10	8
	5 in 10	16	11	7	0	0
October	1 in 10	28	26	26	25	24
	2 in 10	24	20	18	16	14
	3 in 10	20	15	12	10	7
	5 in 10	14	8	0	0	0

[1] The months of January, February, March, November, and December are not shown, because crops are rarely damaged by drought during those months.

[2] The storage capacity of the soil is expressed as the depth of water that a soil can hold and make available to plants.

The soils of Meriwether County have good potential for the growth of trees. Many landowners have begun to improve their stands by applying good conservation practices. Markets for lumber, veneer, and pulpwood are adequate, but a greater number of markets for low-value hardwoods are needed. A major problem in the county is the need to plant pine to replace the scrub hardwoods on the uplands.

Management of woodland

Grazing, fire, insects, and disease damage or destroy the trees and reduce the amount of wood products available for harvest. Therefore, good management is needed to protect the trees in wooded areas.

Protection from grazing.—Wooded areas need protection from excessive grazing, which not only destroys seedlings and damages trees, but also makes the soils more likely to erode and less likely to take in and store water. Uncontrolled grazing is particularly harmful on steep or eroded woodland. Where some grazing is necessary, the

Figure 7.—**Low-value hardwoods and scattered longleaf pines on Cobbly and gravelly land, steep.**

livestock should be distributed so that not more than 40 percent of the low-growing cover is eaten. Forage is more plentiful in April, May, and June than during the rest of the year, and grazing is less harmful to the trees in those months than at other times. Trees are generally damaged less by the grazing of cattle than by the grazing of other animals.

Protection from fire.—Fire kills seedlings, young trees, and some of the larger trees. It also destroys humus and litter, thus increasing the hazard of erosion. Firebreaks, such as roads or plowed or disked fire lanes, help protect wooded areas. At a firebreak, firefighters can start a backfire, which is a fire set to counter an advancing fire. A fire-protection unit, which has operated in the county for several years, is skilled in fighting fires.

Protection from insects and disease.—Serious losses from disease and insects are unlikely. Timber should be cut in fall or winter, however, to avoid damage from insects. Logging should be done with care so that the trees left standing are not scarred and thus made more susceptible to disease.

Woodland suitability groups

Management of woodland can be planned more effectively if the soils are grouped according to those characteristics that affect the survival and growth of various kinds of trees. For this reason, the soils of Meriwether County have been placed in woodland suitability groups. Each group consists of soils that have about the same suitability for wood crops, require about the same man-

agement, and have about the same potential productivity. Because trees suitable for commercial use normally do not grow on them, Gullied land (Gul), Rock land (Roc), and Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded (MEF2), were not placed in a woodland suitability group.

Listed in table 11, and later described in the text, are the 11 woodland suitability groups in this county. For each suitability group are given the average site index of various kinds of trees grown commercially, the annual growth of these trees in board feet per acre, and hazards and limitations that affect the management of each group. The terms used in this table require explanation.

The potential productivity of a soil is expressed as the site index. The site index for a given soil is the height, in feet, that a specified kind of tree will reach in 50 years. The site index of a soil is determined mainly by the capacity of the soil to supply moisture and to provide growing space for tree roots.

Each woodland suitability group has, in varying degree, limitations that affect its management. In the descriptions of the suitability groups, some of these limitations are expressed in the relative terms, *slight*, *moderate*, or *severe*. The relative term expresses the degree of limitation, as explained in the following paragraphs.

TABLE 11.—*Woodland suitability groups of soils, their potential productivity, and ratings for major limitations and hazards affecting management*

Woodland suitability groups	Commercial trees	Potential average productivity		Hazards and management
		Site index [1]	Annual growth [2]	
			Cords	
Group 1: Moderately deep or deep, well-drained soils that have a surface layer of sandy loam or loamy sand and a subsoil of sandy clay loam to clay; these soils are on or near Pine Mountain; they are moderately permeable and are slightly to moderately eroded. Braddock sandy loam (BcB2, BcC2, BcD2, BcE2). Habersham gravelly loamy sand (HDB, HDC, HDD). Thurmont loamy sand (TkB, TkC, TkD).	Loblolly pine Shortleaf pine	79 67	1. 4 1. 3	Plant competition is moderate where openings are made in the canopy, and seedling mortality is moderate. Equipment limitations and the hazard of erosion range from slight on the gentle slopes to severe on the steep slopes. The windthrow hazard ranges from slight on the gentle slopes to moderate on the steep slopes.
Group 2: Moderately deep, well-drained, severely eroded, moderately permeable soils on or near Pine Mountain; their surface layer is yellowish-red to red sandy clay loam, and their subsoil is red clay to clay loam. Braddock sandy clay loam (BdC3, BdD3). Habersham sandy clay loam (HCC3).	Loblolly pine Shortleaf pine	80 81	1. 4 1. 6	Plant competition is slight where openings are made in the canopy. Seedling mortality is moderate because of erosion. Equipment limitations and the windthrow hazard are moderate. The erosion hazard is severe.
Group 3: Shallow, somewhat excessively drained, rapidly permeable, cobbly and gravelly soils on Pine Mountain. Cobbly and gravelly land (CgC, CgD, CgE).	Loblolly pine Shortleaf pine Longleaf pine	76 66 70	1. 2 1. 3 . 9	Plant competition is moderate to severe where openings are made in the canopy. Equipment limitations are moderate on the smoother slopes because of the cobbles; they are severe on the steep slopes. Seedling mortality and the hazard of windthrow are moderate. The erosion hazard is slight.
Group 4: Deep, moderately well drained to somewhat excessively drained, variable-textured soils on first bottoms or in slight upland depressions. Alluvial land (Alm). Buncombe loamy sand (Bfs). Local alluvial land (Lcm).	Yellow-poplar Sweetgum Loblolly pine Shortleaf pine Water oak	110 100 102 86 90	2. 1 (3) 2. 1 1. 8 (3)	The only limiting factor that is a problem is competition from undesirable plants during the time desirable trees are becoming established. Special preparation of the site is necessary, and some treatment is needed for a year or two after planting.

See footnotes at end of table.

TABLE 11.—*Woodland suitability groups of soils, their potential productivity, and ratings for major limitations and hazards affecting management*—Continued

Woodland suitability groups	Commercial trees	Potential average productivity		Hazards and management
		Site index [1]	Annual growth [2]	
			Cords	
Group 5: Deep, well-drained, slightly to moderately eroded soils on smooth ridges or steep slopes; the surface layer is sandy loam or loam, and the subsoil is moderately permeable clay loam to clay. Cecil sandy loam (CYB, CYB2, CYC, CYC2, CYD2). Davidson loam (DgB2, DgC2, DgE2). Lloyd sandy loam (LdB2, LdC2, LdD2). Madison sandy loam (MgB2, MgC2, MgD2, MgE2).	Loblolly pine Yellow-poplar Shortleaf pine Red oak	82 80 71 70	1. 4 1. 2 1. 3 . 6	Plant competition is moderate where openings are made in the canopy. Seedling mortality is slight. Equipment limitations and the hazards of windthrow and erosion are slight on the gentle slopes and moderate to severe on slopes of more than 15 percent.
Group 6: Shallow to deep, well drained to moderately well drained soils of uplands and terraces. Altavista fine sandy loam (AkB). Musella clay loam (MvC3, MvD2, MvD3). Wickham fine sandy loam (WgB2, WgC2).	Loblolly pine Shortleaf pine Red oak	75 68 65	1. 2 1. 3 . 5	Plant competition is slight where openings are made in the canopy, and seedling mortality is slight to moderate. Equipment limitations and the hazards of windthrow, erosion, and drought range from slight on the gentle slopes to severe on slopes of more than 15 percent.
Group 7: Deep to shallow, well-drained, severely eroded to gullied soils that have a surface layer of sandy clay loam to clay and a moderately permeable subsoil. Appling sandy clay loam (AnC3, AnD3). Appling-Gullied land complex (AnC4). Cecil sandy clay loam (CZB3, CZC3, CZD3, CZE3). Cecil-Gullied land complex (CZC4, CZD4). Davidson clay loam (DhB3, DhC3, DhD3). Lloyd clay loam (LeB3, LeC3, LeD3, LeE3). Lloyd-Gullied land complex (LeC4, LeD4). Madison sandy clay loam (MIB3, MIC3, MID3, MIE3). Madison-Gullied land complex (MIC4, MID4). Wickham sandy clay loam (WnC3).	Loblolly pine Shortleaf pine	74 66	1. 2 1. 2	Plant competition is slight where openings are made in the canopy. Equipment limitations and seedling mortality are moderate on the gentle slopes, as are the hazards of drought and windthrow; they are severe on the steep slopes. The erosion hazard is severe.
Group 8: Shallow to deep, moderately well drained to somewhat excessively drained, soils that have a coarse-textured surface layer and are on uplands. Appling loamy sand (ApB, ApB2, ApC2). Louisa coarse sandy loam (LEC, LED, LEE). Louisburg loamy coarse sand (LCB, LCC, LCD). Louisburg stony loamy coarse sand (LDC, LDD, LDE). Vance loamy coarse sand (VdB2, VdC2, VdD2).	Lobolly pine Shortleaf pine	78 69	1. 4 1. 3	Plant competition is slight where openings are made in the canopy. Equipment limitations are slight to severe; they increase as the slope becomes steeper and the number of stones becomes greater. Seedling mortality and the hazards of windthrow and drought are moderate. The erosion hazard is slight to moderate.

See footnotes at end of table.

TABLE 11.—*Woodland suitability groups of soils, their potential productivity, and ratings for major limitations and hazards affecting management*—Continued

Woodland suitability groups	Commercial trees	Potential average productivity		Hazards and management
		Site index [1]	Annual growth [2]	
			Cords	
Group 9: Somewhat poorly drained to moderately well drained soils that have a compact subsoil and are on uplands.	Loblolly pine	72	1. 2	Plant competition is moderate where openings are made in the canopy. Equipment limitations, seedling mortality, and the hazard of windthrow are also moderate. The erosion hazard is slight to moderate.
	Shortleaf pine	63	1. 1	
Colfax sandy loam, overwash (CpB). Colfax loamy coarse sand (CIB, CIC, CIC2). Vance sandy clay loam (VbC3).				
Group 10: Moderately well drained to poorly drained, very gently sloping soils that have a subsoil that is fine textured, plastic, and slowly permeable.	Loblolly pine	68	1. 1	Plant competition is severe where openings are made in the canopy. Seedling mortality and the hazard of windthrow are severe because of the compact subsoil. The compact subsoil also causes moderate equipment limitations.
	Shortleaf pine	60	1. 1	
Iredell sandy loam (IbB2). Worsham coarse sandy loam (WoB).				
Group 11: Somewhat poorly drained to poorly drained, nearly level soils on first bottoms or low stream terraces.	Loblolly pine [4]	88	1. 5	Because the soils are wet, plant competition and equipment limitations are severe. Seedling mortality is moderate. The hazards of erosion, windthrow, and drought are slight.
	Sweetgum	90	(3)	
	Black gum	80	(3)	
	Green ash	80	(3)	
	Water oak	80	(3)	
Alluvial land, moderately wet (Alp). Alluvial land, wet (Avp). Augusta sandy loam (Afs). Chewacla silt loam (Csl). Roanoke silt loam (Ron). Wehadkee silty clay loam (Weh).				

[1] Site index from Soil Survey Interpretations for Woodland Conservation, Georgia Progress Report, 1961.

[2] Average yearly growth per acre in standard rough cords to age 35, in a fully stocked, natural stand, without intensive management. Adapted from: (*1*) Volume, Yield, and Stand Tables for Second-Growth Southern Pines. USDA Misc. Pub. No. 50, 202 pp., Washington, D.C. 1929. (Now out of print.) (*2*) Yield, Stand, and Volume Table for Even-Aged Upland Oak Forests. USDA Tech. Bul. No. 560, 87 pp., illus. 1937. (Reprinted 1961.)

[3] Adequate growth figures not available.

[4] In this county loblolly pine is considered poorly suited to Alluvial land, moderately wet, and to Wehadkee silty clay loam.

Plant competition.—When openings are made in the woodland canopy, brush and other undesirable plants invade. The invading growth competes with the desirable trees and hinders their establishment and growth.

Competition is *slight* if unwanted plants are no special problem. It is *moderate* if the invaders delay but do not prevent the establishment of a normal, fully stocked stand. Where plant competition is moderate, seedbed preparation is generally not needed and simple methods can be used to prevent undesirable plants from invading. Competition is *severe* if trees cannot regenerate naturally. Where competition is severe, carefully prepare the site and use management that includes controlled burning, spraying with chemicals, and girdling.

Equipment limitations.—Drainage, slope, erosion, number or size of stones, soil texture, or other soil characteristics may restrict or prohibit the use of ordinary equipment for planting, pruning, or harvesting. The limitation is *slight* if there are no restrictions on the type of equipment or on the time of year that the equipment can be used. It is *moderate* if slopes are moderately steep, if heavy equipment is restricted by wetness in winter and early in spring, or if the use of equipment damages the tree roots to some extent. Equipment limitations are *severe* if many types of equipment cannot be used, if the period during which equipment cannot be used is more than 3 months each year, and if the use of equipment severely damages the roots of trees and the structure and stability of the soil. The limitations are *severe* on moderately steep and steep soils that are stony and have rock outcrops. It is also *severe* on wet bottom lands and low terraces in winter or early in spring.

Seedling mortality.—Even when healthly seedlings of a suitable kind of tree are correctly planted or occur naturally in adequate numbers, some of them will not survive if the characteristics of the soil are unfavorable.

Mortality is *slight* if 25 percent or less of the planted seedlings die, or if trees ordinarily regenerate naturally in places where there are enough seeds. It is *moderate* if 25

to 50 percent of the seedlings die, or if trees do not regenerate naturally in numbers needed for adequate restocking. In some places replanting to fill open spaces is necessary. Mortality is *severe* if more than 50 percent of the planted seedlings die, or if the trees ordinarily do not reseed naturally in places where there are enough seeds. If mortality is severe, prepare a special seedbed, and use good methods of planting to insure that there will be a full stand of trees.

Windthrow hazard.—Soil characteristics affect the development of tree roots and how firmly the roots anchor the tree and enable it to resist the force of the wind. Root development may be prevented by a high water table or by an impermeable layer. The protection of surrounding trees also affects the windthrow hazard. Knowing the degree of this hazard is important when choosing trees for planting and when planning release cuttings or harvest cuttings.

The windthrow hazard is *slight* if roots hold the tree firmly against a normal wind. Individual trees are likely to remain standing, even if protective trees on all sides are removed. The hazard is *moderate* if the roots are strong enough to hold the tree firmly, except when the soil is excessively wet and the velocity of the wind is very high. It is *severe* if rooting is not deep enough to give adequate stability. Individual trees are likely to be blown over if they are released on all sides.

Erosion hazard.—The degree of erosion of a soil can affect the growth and development of a stand of trees. Severe erosion may require special practices, even for limited production. Woodland can be protected from erosion by choosing the kinds of trees, by adjusting the rotation age and cutting cycles, by using special techniques in management, and by carefully constructing and maintaining roads, trails, and landings.

The erosion hazard is rated according to the risk of erosion on well-managed woodland that is not protected by special practices. It is *slight* where only a small loss of soil is expected. Generally, erosion is slight if slopes range from 0 to 2 percent and runoff is slow or very slow. The erosion hazard is *moderate* where a moderate loss of soil is expected if runoff is not controlled and the cover of plants is not adequate for protection. It is *severe* where steep slopes, rapid runoff, slow infiltration and permeability, and past erosion make the soil susceptible to severe erosion.

WOODLAND SUITABILITY GROUP 1

In this group are deep to moderately deep, well-drained soils that have a surface layer of sandy loam or loamy sand and a subsoil of sandy clay loam to clay. The soils are on or near Pine Mountain. They are moderately permeable and are slightly to moderately eroded. The following soils are in this group:

BcB2	Braddock sandy loam, 2 to 6 percent slopes, eroded.
BcC2	Braddock sandy loam, 6 to 10 percent slopes, eroded.
BcD2	Braddock sandy loam, 10 to 15 percent slopes, eroded.
BcE2	Braddock sandy loam, 15 to 25 percent slopes, eroded.
HDB	Habersham gravelly loamy sand, 2 to 6 percent slopes.
HDC	Habersham gravelly loamy sand, 6 to 10 percent slopes.
HDD	Habersham gravelly loamy sand, 10 to 15 percent slopes.
TkB	Thurmont loamy sand, 2 to 6 percent slopes.
TkC	Thurmont loamy sand, 6 to 10 percent slopes.
TkD	Thurmont loamy sand, 10 to 15 percent slopes.

The average site index is 79 for loblolly pine and 67 for shortleaf pine. Plant competition is moderate where openings are made in the canopy, and it ordinarily will not prevent a stand from becoming established if seed trees are available. Equipment limitations increase from slight on the gentle slopes to severe on slopes of more than 15 percent. Seedling mortality is slight to moderate, and satisfactory survival can be expected in seasons of normal rainfall. The windthrow hazard is slight on the gentle slopes and moderate on slopes of more than 15 percent. The erosion hazard is slight on the gentle slopes, but it is severe on the steep slopes.

WOODLAND SUITABILITY GROUP 2

This group consists of moderately deep, well-drained, severely eroded soils on or at the foot of Pine Mountain. The surface layer is yellowish-red to red sandy clay loam, and the subsoil is moderately permeable, friable to firm, red clay to clay loam. The following soils are in this group:

BdC3	Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded.
BdD3	Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded.
HCC3	Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded.

The average site index is 80 for loblolly pine and 81 for shortleaf pine. Plant competition is slight where openings are made in the canopy, and a stand of trees can be established if adequate seed trees are available. Equipment limitations are moderate because the sandy clay loam in the surface layer is sticky when wet. Seedling mortality is moderate because the soils are severely eroded; planting losses of between 25 and 50 percent are to be expected. The windthrow hazard is moderate because the rooting zone is only about 20 inches thick. The erosion hazard is severe.

WOODLAND SUITABILITY GROUP 3

This group consists of shallow, somewhat excessively drained, cobbly and gravelly soils on Pine Mountain. The soil material is rapidly permeable, loose cobbly loamy sand. The following soils are in this group:

CgC	Cobbly and gravelly land, sloping.
CgD	Cobbly and gravelly land, strongly sloping.
CgE	Cobbly and gravelly land, steep.

The average site index is 76 for loblolly pine and 66 for shortleaf pine.

Plant competition is moderate to severe where openings are made in the canopy. Seedling mortality is moderate because of the stones or rock outcrops, and a loss of 25 to 50 percent of the seedlings is to be expected if a machine is used for planting. Equipment limitations are moderate on slopes of less than 15 percent because of cobbles and stones, but severe where the slopes are more than 15 percent. The windthrow hazard is moderate because the cobbly and gravelly soil material does not provide good anchorage for roots. The erosion hazard is slight.

WOODLAND SUITABILITY GROUP 4

In this group are deep, moderately well drained to somewhat excessively drained soils that have a variable texture. These soils are on first bottoms or in slight depressions in the uplands. The following soils are in this group:

Alm	Alluvial land.
Bfs	Buncombe loamy sand.
Lcm	Local alluvial land.

The average site index is 102 for loblolly pine and 86 for shortleaf pine. The only limiting factor related to the soils in this group is competition from undesirable plants. The degree of competition from underbrush is usually severe after openings have been made in the canopy. Special management and preparation of the site, such as clearing, harrowing, furrowing, burning, poisoning, or planting are usually necessary to assure a well-stocked stand. Equipment limitations are moderate in winter because of short periods when water is excessive. There are no special problems from seedling mortality, windthrow, erosion, or drought.

WOODLAND SUITABILITY GROUP 5

In this group are deep, well-drained, slightly to moderately eroded soils on smooth ridges or steep slopes. The soils have a surface layer of sandy loam or loam, and a dark-red to mottled brown, moderately permeable, friable to firm subsoil of clay loam to clay. The following soils are in this group:

CYB	Cecil sandy loam, 2 to 6 percent slopes.
CYB2	Cecil sandy loam, 2 to 6 percent slopes, eroded.
CYC	Cecil sandy loam, 6 to 10 percent slopes.
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded.
CYD2	Cecil sandy loam, 10 to 15 percent slopes, eroded.
DgB2	Davidson loam, 2 to 6 percent slopes, eroded.
DgC2	Davidson loam, 6 to 10 percent slopes, eroded.
DgE2	Davidson loam, 15 to 25 percent slopes, eroded.
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded.
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded.
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded.
MgB2	Madison sandy loam, 2 to 6 percent slopes, eroded.
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded.
MgD2	Madison sandy loam, 10 to 15 percent slopes, eroded.
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded.

In this group there are few woodland management problems that are related specifically to the soils. The average site index is 82 for loblolly pine and 71 for shortleaf pine.

Where openings are made in the canopy, plant competition is moderate on the gentle slopes that are not at the base of steeper slopes. Plant competition is severe on gentle slopes at the base of steeper slopes where moisture from seepage collects. In areas where the plant competition is severe, better growing conditions can be provided if the competing vegetation is removed or controlled.

Equipment limitations are slight to moderate on slopes that are less than 15 percent and severe in areas where slopes are more than 15 percent. Seedling mortality is not great enough to be a problem. The hazards of windthrow and erosion are slight on the gentle slopes and moderate in areas where the slopes are more than 15 percent.

WOODLAND SUITABILITY GROUP 6

Moderately productive soils that range from shallow to deep and are moderately well drained to well drained make up this group. These soils are on uplands and terraces. The following soils are in this group:

AkB	Altavista fine sandy loam, 2 to 6 percent slopes.
MvC3	Musella clay loam, 2 to 10 percent slopes, severely eroded.
MvD2	Musella clay loam, 10 to 15 percent slopes, eroded.
MvD3	Musella clay loam, 10 to 15 percent slopes, severely eroded.
MEF2	Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded.
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded.
WgC2	Wickham fine sandy loam, 6 to 10 percent slopes, eroded.

The average site index is 75 for loblolly pine and 68 for shortleaf pine. Plant competition from brush and from undesirable species is slight where openings are made in the canopy. Equipment limitations are slight on slopes of less than 10 percent, moderate on slopes of 10 to 15 percent, and severe on slopes of 15 to 40 percent. Usually, standard equipment can be used for logging, but the clay loams may be slippery after heavy rains. The stony soils and those that have slopes of more than 15 percent require special attention.

Seedling mortality is slight to moderate. On the Musella soils, it is moderate; that is, losses from seedling mortality can be expected to be between 25 and 50 percent of the planted stock, and some interplanting is usually necessary. Windthrow, erosion, and drought are slight to moderate hazards, but the hazard becomes greater as the slope increases. Therefore, it is necessary to choose carefully an appropriate combination of management practices for the steeper areas.

WOODLAND SUITABILITY GROUP 7

This group consists of severely eroded to gullied, deep to shallow, well-drained, moderately permeable soils that have a surface layer of sandy clay loam to clay. The following soils are in this group:

AnC3	Appling sandy clay loam, 6 to 10 percent slopes severely eroded.
AnC4	Appling-Gullied land complex, 6 to 10 percent slopes.
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes.
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes.
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
DhB3	Davidson clay loam, 2 to 6 percent slopes, severely eroded.
DhC3	Davidson clay loam, 6 to 10 percent slopes, severely eroded.
DhD3	Davidson clay loam, 10 to 15 percent slopes, severely eroded.
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes.
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes.
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.
MlC4	Madison-Gullied land complex, 6 to 10 percent slopes.
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.
MlD4	Madison-Gullied land complex, 10 to 15 percent slopes.
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.
WnC3	Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded.

The average site index is 74 for loblolly pine and 66 for shortleaf pine. Plant competition from brush and other undesirable plants is slight where openings are made in the canopy. No special management is needed to maintain normal growth of the trees. Equipment limitations and

seedling mortality are moderate, and windthrow and drought are moderate hazards on slopes of less than 10 percent; these limitations and hazards are severe, however, in steeper and more eroded areas. Erosion is severe on all of the soils in this group. It is the principal cause of the other limitations and hazards.

WOODLAND SUITABILITY GROUP 8

This group consists of moderately well drained to somewhat excessively drained soils that have a moderately thick and generally coarse-textured surface layer. These soils are on uplands. The following soils are in this group:

ApB	Appling loamy sand, 2 to 6 percent slopes.
ApB2	Appling loamy sand, 2 to 6 percent slopes, eroded.
ApC2	Appling loamy sand, 6 to 10 percent slopes, eroded.
LEC	Louisa coarse sandy loam, 6 to 10 percent slopes.
LED	Louisa coarse sandy loam, 10 to 15 percent slopes.
LEE	Louisa coarse sandy loam, 15 to 25 percent slopes.
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes.
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes.
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes.
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes.
LDD	Louisburg stony loamy coarse sand, 10 to 15 percent slopes.
LDE	Louisburg stony loamy coarse sand, 15 to 25 percent slopes.
VdB2	Vance loamy coarse sand, 2 to 6 percent slopes, eroded.
VdC2	Vance loamy coarse sand, 6 to 10 percent slopes, eroded.
VdD2	Vance loamy coarse sand, 10 to 15 percent slopes, eroded.

The average site index is 78 for loblolly pine and 69 for shortleaf pine, but the Louisa soils commonly have a lower site index than the other soils. There is no limitation as a result of undesirable plant competition, because of the rapid soil drainage and lack of moisture. Equipment limitations are severe on the stony soils and on the soils that have slopes of more than 15 percent.

The lack of moisture causes a moderate hazard of seedling mortality on all except the Appling soils. It is likely to cause a loss of 25 to 50 percent of the seedlings unless rainfall is plentiful during the planting season. The hazard of windthrow is slight on the Appling soils, but it is moderate on the other soils because of their shallow root zone. The hazard of erosion is slight, except on Vance loamy coarse sand, 10 to 15 percent slopes, eroded, where this hazard is moderate. Drought is a moderate to severe hazard, as the moisture-storing capacity of most of these soils is low. Drought is a slight hazard on the Appling soils.

WOODLAND SUITABILITY GROUP 9

This group consists of somewhat poorly drained to moderately well drained soils that have a compact subsoil. The soils are on uplands. The following soils are in this group:

CpB	Colfax sandy loam, overwash, 2 to 6 percent slopes.
ClB	Colfax loamy coarse sand, 2 to 6 percent slopes.
ClC	Colfax loamy coarse sand, 6 to 10 percent slopes.
ClC2	Colfax loamy coarse sand, 6 to 10 percent slopes, eroded.
VbC3	Vance sandy clay loam, 6 to 10 percent slopes, severely eroded.

The average site index is 72 for loblolly pine and 63 for shortleaf pine. Where openings are made in the canopy, plant competition is moderate and is the result of imperfect drainage, which encourages the invasion of many undesirable plants. Plant competition usually does not prevent adequate natural regeneration, but growth may be retarded unless some measures are used to control it.

There is a moderate hazard of seedling mortality because the subsoil is shallow and compact, which impedes the development of roots and early establishment of the plants. From 25 to 50 percent mortality can be expected, and some replanting is necessary to fill openings. Equipment limitations and the hazards of windthrow and drought are moderate because of the somewhat poor drainage and the compact subsoil.

WOODLAND SUITABILITY GROUP 10

In this group are soils that have a fine-textured, plastic, slowly permeable subsoil. The soils are on uplands. The following soils are in this group:

IbB2	Iredell sandy loam, 2 to 6 percent slopes, eroded.
WoB	Worsham coarse sandy loam, 2 to 6 percent slopes.

The average site index is 68 for loblolly pine and 60 for shortleaf pine. The surplus moisture in these soils favors the invasion of many undesirable plants and causes plant competition to be severe where openings are made in the canopy. Control of competing vegetation is essential if a stand of desirable trees is to become established and grow.

Excess moisture in the subsoil during wet periods causes moderate limitations for standard logging equipment. Seedling mortality is severe because the subsoil is plastic, and also because the soils are usually too wet or too dry for the preparation of a seedbed. Sometimes more than 50 percent of the planted stand is lost. The windthrow hazard is severe because the plastic subsoil retards the development of roots. The hazard of erosion is slight because the slopes are gentle and the ground cover is usually good.

WOODLAND SUITABILITY GROUP 11

In this group are somewhat poorly drained to poorly drained soils on first bottoms or on low stream terraces. The following soils are in this group:

Alp	Alluvial land, moderately wet.
Avp	Alluvial land, wet.
Afs	Augusta sandy loam.
Csl	Chewacla silt loam.
Ron	Roanoke silt loam.
Weh	Wehadkee silty clay loam.

The average site index is 88 for loblolly pine and 79 for shortleaf pine. The excessive moisture in these soils encourages the growth of brush and undesirable plants and causes plant competition to be severe where openings are made in the canopy. Control of invading plants is necessary before a desirable stand can be established. Equipment limitations are severe following long periods of rainfall. Seedling mortality is moderate because of the excessive moisture, and losses are usually 25 to 50 percent, thus preventing development of a fully stocked stand. The hazards of windthrow and erosion are slight.

Wildlife and Fish[7]

Most of the soils of this county are suited to, and support, one or more species of wildlife. Some species spend most or all of their time in wooded areas; others thrive in open farmlands; and many, such as fish, beaver, and duck, require water for their habitat. Some eat only insects and other animal foods, others eat only vegetation, and some like a combination of the two.

[7] Prepared with the assistance of VERNE E. DAVISON, biologist, Soil Conservation Service.

Bobwhites, mourning doves, rabbits, squirrels, and many nongame birds are common throughout the county. Most farms have sites suitable for fish ponds. Deer and wild turkey require extensive areas of well-watered woodland. Examples of such habitats are the Pine Mountain area in the southeastern corner of the county and the flood plains and adjacent large wooded areas in several other parts. Long, narrow bottom lands along the streams are well distributed throughout the county. They are well suited to wild duck and beaver. Dams made by beaver are common in many of these areas.

Table 12 lists significant foods provided by plants and rates them as either *choice*, *fair*, or *unimportant* for each species of wildlife. The same plants furnish some of the cover needed. Plant cover is generally abundant or excessive, however, in the humid climate that is typical of this county, or cover can be grown readily where needed.

TABLE 12.—*Suitability of various food plants for wildlife*

[1—Choice (Attractive, nutritious.); 2—Fair (Useful when choice foods are gone.); 3—Unimportant (May be eaten in small amounts.)]

Kind of plant	Part of plant eaten	Bobwhite	Deer	Dove	Duck	Rabbit	Squirrel	Turkey	Nongame birds [1]		
									Fruit eaters	Grain and seed eaters	Nut and acorn eaters
Bahiagrass	Foliage	3	1	3	3	3	3	3	3	3	3
	Seeds	2	3	2	3	3	3	1	3	2	3
Beech	Nuts	1	2	3	1	3	1	1	3	3	1
Blackberry	Fruit	1	3	3	3	3	2	1	1	3	3
	Foliage	3	2	3	3	3	3	3	3	3	3
Blackgum	Fruit	2	3	3	3	3	1	2	1	3	2
Browntopmillet	Seeds	1	3	1	1	3	3	1	3	1	3
Buttonclover	Foliage	3	1	3	3	1	3	1	3	3	3
Cherry, black	Fruit	1	3	3	3	3	1	2	1	3	2
Clover, crimson	Foliage	2	1	3	3	1	3	1	3	3	3
Corn	Seeds	1	1	1	1	1	1	1	3	1	2
Cowpeas.	Seeds	1	1	2	3	1	3	1	3	1	3
	Foliage	3	1	3	3	1	3	3	3	3	3
Dewberry.	Fruit	1	3	3	3	3	2	2	1	3	3
Dogwood, flowering.	Fruit	1	3	3	3	3	1	1	1	3	3
Fescue, tall.	Foliage	3	2	3	3	2	3	2	3	3	3
Grapes, wild.	Fruit	3	3	3	3	3	2	1	1	3	3
Greenbrier.	Foliage	3	1	3	3	1	3	3	3	3	3
Hackberry.	Fruit	2	3	3	3	3	2	1	1	3	3
Hickory.	Nuts	3	3	3	3	3	1	2	3	3	1
Honeysuckle.	Foliage	3	1	3	3	2	3	3	3	3	3
Japanese millet.	Seeds	1	3	1	1	3	3	2	3	1	3
Lespedeza, annual.	Foliage	3	1	3	3	2	3	2	3	3	3
	Seeds	1	3	3	3	3	3	2	3	3	3
Lespedeza, bicolor.	Foliage	3	1	3	3	2	3	3	3	3	3
	Seeds	1	3	3	3	3	3	3	3	3	3
Lespedeza, sericea.	Seeds	3	3	3	3	3	3	3	3	3	3
Mulberry.	Fruit	1	2	3	3	3	1	1	1	3	3
Oak.	Acorns	1	1	3	1	3	1	1	3	3	1
Oats.	Foliage	3	1	3	3	1	3	1	3	3	3
Pecan.	Nuts	1	2	3	3	3	1	1	3	3	1
Pine.	Seeds	1	3	1	3	3	1	1	3	1	1
Ragweed, common.	Seeds	1	3	1	3	3	3	3	3	1	3
Rescuegrass.	Foliage	3	1	3	3	1	3	1	3	3	3
Ryegrass.	Foliage	3	1	3	3	1	3	1	3	3	3
Smartweed.	Seeds	2	3	3	1	3	3	3	3	3	3
Sorghum, grain.[2]	Seeds	1	1	1	1	1	1	1	3	1	3
Sweetgum.	Seeds	1	3	1	3	3	2	2	3	1	3
Tickclover (beggarlice).	Seeds	1	3	3	3	3	3	2	3	3	3
	Foliage	3	1	3	3	3	3	3	3	3	3
Wheat.	Foliage	3	1	3	3	1	3	1	3	3	3
Whiteclover.	Foliage	2	1	3	3	1	3	1	3	3	3
	Seeds	1	3	1	3	3	3	3	3	1	3

[1] Fruit eaters include bluebirds, catbirds, mockingbirds, and waxwings. Grain and seed eaters include blackbirds, cardinals, meadowlarks, sparrows, and towhees. Nut and acorn eaters include chickadees, grackles, bluejays, titmice, and woodpeckers.

[2] Grain sorghum is a choice food for most birds that eat grain; however, it attracts blackbirds, cowbirds, sparrows, and other birds that are generally unwanted. Also, grain sorghum rots quickly in a humid climate. These two factors limit its value as food for wildlife.

The following is a summary of the needs of the more important wildlife species in the county.

Beaver.—Beaver eat strictly plant foods—mostly bark, roots, and green plants. The tender bark of alder, ash, birch, cottonwood, maple, pine, sweetgum, and willow are the tree foods most eaten. Beaver also eat the tender shoots of elder, honeysuckle, grass, and weeds, and acorns and corn are choice foods. The chief feeding areas are within 150 feet of water.

Bobwhite.—Choice foods are acorns, beechnuts, blackberries, browntopmillet, wild black cherries, corn, cowpeas, dewberries, annual and bicolor lespedezas, mulberries, pecans, common ragweed, tickclover and the seeds of dogwood, pine, and sweetgum. Bobwhite also eat many insects. Their food must be close to sheltering vegetation that will protect them from sun, predators, and bad weather.

Deer.—Choice foods are acorns, bahiagrass, clover, corn, cowpeas, greenbrier, honeysuckle, annual and bicolor lespedezas, oats, rescuegrass, ryegrass, and wheat. For adequate cover, deer generally need wooded areas that are 500 acres or more in size.

Ducks.—Choice foods are acorns, beechnuts, browntopmillet, corn, Japanese millet, and the seeds of smartweed. These foods must be covered with water to be readily available to ducks, although ducks will feed occasionally on acorns and corn on dryland.

Mourning dove.—Choice foods are browntopmillet, corn, Japanese millet, common ragweed, and the seeds of pine and sweetgum. Doves do not eat insects, green leaves, or fruits. They drink water daily.

Rabbits.—Suitable cover, such as a blackberry or plum thicket, is essential for the protection of rabbits. Choice foods are clover, winter grasses, and other succulent vegetation, and these are generally available.

Squirrels.—Choice foods are acorns, beechnuts, black cherries, corn, hickory nuts, mulberries, pecans, and the seeds of blackgum, flowering dogwood, and pine trees.

Wild turkey.—This bird survives only in large wooded areas that are generally 2,000 acres or larger. Turkeys need surface water to drink each day, and they often roost in large trees over or near water. Choice foods are insects, acorns, bahiagrass, beechnuts, blackberries, dewberries, browntopmillet, clover leaves, corn, cowpeas, wild grapes, hackberries, mulberries, oats, pecans, wheat, the seeds of flowering dogwood and pine, and rescuegrass and ryegrass for forage.

Nongame birds.—The many species of nongame birds differ greatly in their choice of food. Several species eat nothing but insects, and a few eat insects and fruits. Several others combine insects with acorns, nut meats, and fruits. The rating of the foods in table 12 for nongame birds is a general one, and there are many exceptions.

Fish.—The principal game fish in the many farm ponds and streams are bass, bluegills, and channel catfish. The choice foods of bluegills are aquatic worms and insects and their larvae. Small fish are essential foods for bass and channel catfish. The number of such fish is related directly to the abundance of the food supply in the water, to the fertility of the soils of the watershed, and to a lesser degree to the fertility of the soils at the bottom of the pond. Because the soils are acid and low in natural fertility, most ponds need fertilizer and lime to produce enough microscopic algae to feed a large poundage of worms that, in turn, become food for fish.

Wildlife suitability groups

Most species of wildlife cannot be related directly to the soils of the county. Instead, there is a two-step relationship: (1) Each kind of animal is related to its choice foods, as shown in table 12; and (2) each choice food is related directly to a group of soils that have similar characteristics. (See table 13.)

Table 13 lists alphabetically the names of the same plants that are listed in table 12. In table 13, however, the suitability of each kind of plant for the soils in the 11 soil groups is rated as *suited*, *marginal*, or *poorly suited*. Thus, the symbols designate the suitability of a group of soils for the foods listed for each kind of wildlife. Additional information can be obtained from the work unit conservationist of the Soil Conservation Service. He

TABLE 13.—*Suitability of various food plants for the soils in wildlife groups*

[1—Suited; 2—marginally suited; 3—poorly suited or unsuited]

Kind of plant	Soil groups										
	1	2	3	4	5	6	7	8	9	10	1
Bahiagrass	1	3	2	3	2	3	2	3	1	2	3
Beech	2	2	3	3	1	3	3	2	1	2	3
Blackberry	1	1	2	3	1	2	2	2	1	1	3
Blackgum	1	1	3	3	2	3	3	3	1	1	3
Browntopmillet	1	3	2	3	1	3	2	3	1	1	3
Buttonclover	1	3	2	3	3	3	3	3	1	2	3
Cherry, black, wild	1	1	3	3	2	3	2	2	1	2	3
Clover, crimson	1	3	2	3	2	3	2	3	1	2	3
Corn	1	3	2	3	2	3	2	3	1	2	3
Cowpeas	1	3	2	3	2	3	2	3	1	2	3
Dewberry	1	2	2	2	1	2	2	3	2	2	3
Dogwood, flowering	1	1	2	3	1	2	1	2	1	2	3
Fescue, tall	1	2	2	3	2	2	3	3	1	1	2
Grapes, wild	1	1	2	2	2	3	2	2	1	2	3
Greenbrier	1	2	2	2	1	2	2	2	1	2	3
Hackberry	1	2	2	3	2	3	3	3	1	2	3
Hickory	1	1	3	3	2	3	2	2	1	2	3
Honeysuckle	1	3	2	3	1	3	3	3	1	2	3
Japanese millet	1	3	3	3	3	3	3	3	1	1	1
Lespedeza, annual	1	2	1	2	1	2	2	3	1	2	3
Lespedeza, bicolor	1	2	1	2	1	2	2	3	1	3	3
Lespedeza, sericea	1	2	1	2	1	2	2	3	1	3	3
Mulberry	1	2	3	3	2	3	3	3	1	2	3
Oak [1]	1	2	3	3	2	2	2	2	1	2	[2] 1
Oats (forage)	1	3	2	3	1	3	2	3	1	3	3
Pecan	1	2	3	3	3	3	2	3	1	2	3
Pine (loblolly and shortleaf)	1	1	2	2	1	2	2	2	1	2	3
Ragweed, common	1	3	2	3	1	3	3	3	1	3	3
Rescuegrass	1	3	2	3	1	3	3	3	1	2	3
Ryegrass	1	3	2	3	1	3	2	3	1	2	3
Smartweed	3	3	3	3	3	3	3	3	2	1	1
Sorghum, grain [3]	3	3	3	3	3	3	3	3	3	3	3
Sweetgum	1	1	2	3	2	2	2	3	1	1	2
Tickclover (beggarlice)	1	2	1	2	1	2	2	3	1	3	3
Wheat (forage)	1	3	2	3	2	3	2	3	1	3	3
Whiteclover	1	3	3	3	2	3	3	3	1	1	2

[1] Includes black, blackjack, northern red, pin, post, sawtooth, scarlet, Shumard, southern red, water, white, and willow oaks.

[2] Overcup oak only.

[3] Grain sorghum is a choice food for most birds that eat grain; however, it attracts blackbirds, cowbirds, sparrows, and other birds that are generally unwanted. Also, it rots quickly in a humid climate. These two factors limit its value and suitability as a food for wildlife.

maintains specific up-to-date technical guides for each important species of wildlife and fish and for each significant food or cover plant. He also has specifications for establishing and maintaining conservation practices that apply to various soils and surface waters in the county.

In the following pages, the wildlife suitability groups of soils in this county are described and the soils of each group are listed. Because of their small acreage, and the fact that they do not fit well in any of the groups, Buncombe loamy sand, and Iredell sandy loam, 2 to 6 percent slopes, eroded, were not placed in a wildlife suitability group.

WILDLIFE GROUP 1

This group consists of deep, chiefly well-drained soils on uplands and stream terraces. The slopes range from 2 to 10 percent. In most of the soils, the surface layer is loam to loamy sand and is 5 to 8 inches thick, but a few areas have a gravelly surface layer. The subsoil is clay to sandy clay loam and is moderately permeable. These soils are easily worked, and the available moisture capacity is moderately high. Because of the mild slopes, the hazard of erosion is only slight to moderate in most of the acreage.

These soils occupy about half the county, and about half the acreage is used for cultivated crops or pasture. The soils are suited to many choice food plantings for several kinds of wildlife. Because of their position and slope, these soils are generally not suitable for flooding for duck fields, but the many drains provide favorable sites for ponds.

The soils in this group are—

Altavista fine sandy loam, 2 to 6 percent slopes.
Appling loamy sand, 2 to 6 percent slopes.
Appling loamy sand, 2 to 6 percent slopes, eroded.
Appling loamy sand, 6 to 10 percent slopes, eroded.
Braddock sandy loam, 2 to 6 percent slopes, eroded.
Braddock sandy loam, 6 to 10 percent slopes, eroded.
Cecil sandy loam, 2 to 6 percent slopes.
Cecil sandy loam, 2 to 6 percent slopes, eroded.
Cecil sandy loam, 6 to 10 percent slopes.
Cecil sandy loam, 6 to 10 percent slopes, eroded.
Davidson loam, 2 to 6 percent slopes, eroded.
Davidson loam, 6 to 10 percent slopes, eroded.
Habersham gravelly loamy sand, 2 to 6 percent slopes.
Habersham gravelly loamy sand, 6 to 10 percent slopes.
Lloyd sandy loam, 2 to 6 percent slopes, eroded.
Lloyd sandy loam, 6 to 10 percent slopes, eroded.
Madison sandy loam, 2 to 6 percent slopes, eroded.
Madison sandy loam, 6 to 10 percent slopes, eroded.
Thurmont loamy sand, 2 to 6 percent slopes.
Thurmont loamy sand, 6 to 10 percent slopes.
Wickham fine sandy loam, 2 to 6 percent slopes, eroded.
Wickham fine sandy loam, 6 to 10 percent slopes, eroded.

WILDLIFE GROUP 2

This group consists of deep, well-drained soils on uplands where slopes are between 12 and 25 percent. The surface layer is loam to loamy sand and is 5 to 8 inches thick. The subsoil is clay to clay loam and is moderately permeable. Because the soils are steep, they are difficult to work and there is a severe hazard of erosion. The available moisture capacity is moderately high.

These soils are extensive and are well distributed throughout the county. Most of the acreage is wooded. Because of the steep slopes, these soils are only marginal for the annual lespedezas and are generally unsuited to other annual plants. They are marginal also for perennial grasses, lespedezas, and some of the woody plants. The soils are suited to blackgum, wild black cherry, flowering dogwood, hickory, and pine trees. The many drains provide favorable sites for ponds.

The soils in this group are—

Braddock sandy loam, 10 to 15 percent slopes, eroded.
Braddock sandy loam, 15 to 25 percent slopes, eroded.
Cecil sandy loam, 10 to 15 percent slopes, eroded.
Davidson loam, 15 to 25 percent slopes, eroded.
Habersham gravelly loamy sand, 10 to 15 percent slopes.
Lloyd sandy loam, 10 to 15 percent slopes, eroded.
Madison sandy loam, 10 to 15 percent slopes, eroded.
Madison sandy loam, 15 to 25 percent slopes, eroded.
Thurmont loamy sand, 10 to 15 percent slopes.
Vance loamy coarse sand, 10 to 15 percent slopes, eroded.

WILDLIFE GROUP 3

This group consists chiefly of deep, well-drained, severely eroded soils on uplands and high stream terraces. The slopes range from 2 to 10 percent. The surface layer is sandy clay loam to clay loam and is 4 to 6 inches thick. The subsoil is clay to clay loam and is moderately permeable. These soils have a moderately high available moisture capacity. Soil tilth is poor.

These soils are extensive and occur throughout the county. Nearly all of the acreage has been cultivated. Dewberry, lespedeza, tickclover, and pine trees are suited to these soils. Because of the poor tilth and severe erosion, however, food plantings for wildlife are difficult to establish and maintain. These soils are only marginal for cultivated crops, clovers, grasses, small grains, and most shrubs and hardwoods. The many drains provide favorable sites for ponds.

The soils in this group are—

Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.
Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded.
Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.
Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.
Davidson clay loam, 2 to 6 percent slopes, severely eroded.
Davidson clay loam, 6 to 10 percent slopes, severely eroded.
Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.
Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.
Vance sandy clay loam, 6 to 10 percent slopes, severely eroded.
Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded.

WILDLIFE GROUP 4

This group consists of well-drained, severely to very severely eroded soils on uplands. The slopes range from 6 to 25 percent, and the soils are gullied in places. The surface layer is sandy clay loam to clay and is 2 to 5 inches thick. The subsoil is moderately permeable, but movement of water into the soils is slow. Tilth is poor, and the available moisture capacity is low to moderate. The hazard of erosion is very severe.

These soils are extensive and occur throughout the county. Most of the acreage has been cultivated, but much of it is reverting to pine. Because of the severe erosion and the moderate to steep slopes, vegetation is difficult to establish and maintain. None of the plants used as food by wildlife are well suited. The lespedezas, tickclover, and pine trees can be grown, but the soils are only marginal for these plants.

The soils in this group are—

Appling-Gullied land complex, 6 to 10 percent slopes.
Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.
Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil-Gullied land complex, 6 to 10 percent slopes.
Cecil-Gullied land complex, 10 to 15 percent slopes.
Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.
Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.
Davidson clay loam, 10 to 15 percent slopes, severely eroded.
Gullied land.
Lloyd-Gullied land complex, 6 to 10 percent slopes.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Lloyd-Gullied land complex, 10 to 15 percent slopes.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Madison-Gullied land complex, 6 to 10 percent slopes.
Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.
Madison-Gullied land complex, 10 to 15 percent slopes.
Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.

WILDLIFE GROUP 5

This group consists of moderately well drained soils on uplands. The slopes range from 2 to 10 percent. The surface layer is sandy loam and is 5 to 8 inches thick. The subsoil is compact, dense clay that restricts the movement of water. These soils are easily worked, but they have low available moisture capacity. The hazard of erosion is moderate to moderately severe. These soils are suitable for planting to choice foods for several kinds of wildlife.

The soils in this group are—

Vance loamy coarse sand, 2 to 6 percent slopes, eroded.
Vance loamy coarse sand, 6 to 10 percent slopes, eroded.

WILDLIFE GROUP 6

This group consists of well-drained soils of the uplands. The soils are eroded and are moderately shallow to bedrock. The slopes range from 2 to 15 percent. The surface layer is clay loam and is 4 to 6 inches thick. The subsoil is clay loam to clay and is moderately to slowly permeable. The available moisture capacity is low. The range of moisture content within which these soils can be worked is narrow. The hazard of further erosion is severe. These soils are marginal or are poorly suited to most of the choice food plantings for wildlife.

The soils in this group are—

Musella clay loam, 2 to 10 percent slopes, severely eroded.
Musella clay loam, 10 to 15 percent slopes, eroded.
Musella clay loam, 10 to 15 percent slopes, severely eroded.

WILDLIFE GROUP 7

This group consists of somewhat excessively drained soils that have only weak development of a profile. The soils are on uplands and have slopes of 2 to 10 percent. The surface layer is loamy coarse sand or coarse sandy loam and is 5 to 10 inches thick. Depth to bedrock ranges from a few inches to several feet. These soils are easily worked, but their available moisture capacity is low.

Because of the low available moisture capacity and the shallow root zone, these soils are marginal or are poorly suited to most of the food plants required by wildlife. The hazard of erosion is severe if these soils are cultivated. The soils are better suited to pines and flowering dogwood than to other food plants for wildlife. Because they are shallow over bedrock, these soils are poorly suited as sites for ponds.

The soils in this group are—

Louisa coarse sandy loam, 6 to 10 percent slopes.
Louisburg loamy coarse sand, 2 to 6 percent slopes.
Louisburg loamy coarse sand, 6 to 10 percent slopes.

WILDLIFE GROUP 8

This group consists chiefly of cobbly or stony soils that have only weak development of a profile. The slopes range from 4 to 60 percent. The soils generally have a shallow rooting zone and low available moisture capacity.

These soils are extensive near Pine Mountain, and they are in small areas in other parts of the county. Nearly all of the acreage is wooded. Because of the cobbles, stones, steep slopes, and low available moisture capacity, the soils are not suited to cultivated crops. Only a few of the choice wildlife food plants, such as the hickories and oaks, are suited. Because the soils are shallow over bedrock and are cobbly or stony, they are poorly suited as sites for ponds. Permanent streams or springs are scarce in some areas.

The soils in this group are—

Cobbly and gravelly land, sloping.
Cobbly and gravelly land, strongly sloping.
Cobbly and gravelly land, steep.
Louisa coarse sandy loam, 10 to 15 percent slopes.
Louisa coarse sandy loam, 15 to 25 percent slopes.
Louisburg loamy coarse sand, 10 to 15 percent slopes.
Louisburg stony loamy coarse sand, 6 to 10 percent slopes.
Louisburg stony loamy coarse sand, 10 to 15 percent slopes.
Louisburg stony loamy coarse sand, 15 to 25 percent slopes.
Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded.
Rock land.

WILDLIFE GROUP 9

This group consists of deep, well drained or moderately well drained land types around the heads of drainageways or on first bottoms along creeks. The areas on first bottoms are flooded for short periods, at intervals ranging from a few months to several years. The floodwaters usually remain less than 2 days. The surface layer is loamy sand to sandy loam and is 5 to 10 inches thick. Beneath the surface layer, the material is variable, but loamy sand predominates. These soils are easily worked. They have high available moisture capacity and are suited to a number of kinds of plants.

Small areas of these land types are scattered throughout the county, and many areas are used for cultivated crops or pasture. Most of the choice food plants for wildlife are suited. Most areas can be flooded for duck fields. Favorable sites for ponds are common on Alluvial land.

The land types in this group are—

Alluvial land.
Local alluvial land.

WILDLIFE GROUP 10

This group consists of deep, chiefly somewhat poorly drained soils on first bottoms, around the heads of drains, or on low slopes. The surface layer ranges from silt loam to loamy coarse sand and is 5 to 8 inches thick. Beneath the surface layer, the texture is variable. The areas of first bottoms are flooded for periods of 1 to 5 days almost every year. If adequately drained, these soils are easily worked. The available moisture capacity is moderate to high.

These soils are moderately extensive, and much of the acreage is either wooded or idle. Because of the poor drainage, the high water table, and flooding, these soils are suited to only a few of the choice food plants for

wildlife. Browntopmillet, whiteclover, tall fescue, Japanese millet, and smartweed are suited. Many areas can be flooded for duck fields. Water can be impounded on these soils, or ponds can be dug.

The soils in this group are—

Alluvial land, moderately wet.
Augusta sandy loam.
Chewacla silt loam.
Colfax loamy coarse sand, 2 to 6 percent slopes.
Colfax loamy coarse sand, 6 to 10 percent slopes.
Colfax loamy coarse sand, 6 to 10 percent slopes, eroded.
Colfax sandy loam, overwash, 2 to 6 percent slopes.

WILDLIFE GROUP 11

In this group are poorly drained soils on first bottoms, on very low stream terraces, or in depressions on the low uplands. The surface layer ranges from loamy sand to silty clay loam and is 4 to 10 inches thick. Beneath the surface layer is gray material that ranges from loamy sand to silty clay and clay in texture. Because of the high water table, the root zone of these soils is shallow. The areas on first bottoms are flooded for periods of a few days to several weeks every year. These soils are difficult to work.

The poor drainage, high water table, and flooding of these soils limit their production of choice food plants to Japanese millet and smartweed for ducks and to woody plants for beaver. Most areas can be flooded for duck fields. There are many dams built by beaver. Water can be impounded or ponds can be dug.

The soils in this group are—

Alluvial land, wet.
Roanoke silt loam.
Wehadkee silty clay loam.
Worsham coarse sandy loam, 2 to 6 percent slopes.

Engineering Properties of Soils [8]

Soil engineering is an important phase of engineering practice. It is, in a broad sense, a subdivision of structural engineering, because it deals either with soils as foundation material upon which structures rest or with soils as structural material. Soils are natural materials that occur in great variety over the earth, and their engineering properties may vary widely within the relatively small confines of a single project. Generally speaking, soils must be used in the locality and condition in which they are found. A large part of soil engineering practice consists of locating the various soils, determining their engineering properties, correlating those properties with the job requirements, and selecting the best soil material for the job.

This soil survey report contains information about the soils that will be helpful to engineers. Special emphasis has been placed on engineering properties of the soils as they relate to construction of irrigation systems, farm ponds, terraces, waterways, and other structures to conserve soil and water.

The information in this report can be used to—

1. Make soil and land use studies that will aid in selecting and developing sites for industrial, business, residential, and recreational purposes.
2. Make preliminary evaluations of soil and ground conditions that will aid in selecting the best locations for highways, pipelines, airports, and telephone lines.
3. Locate sources of material for use in construction.
4. Make preliminary evaluations of the relation of pavement performance to types of soil and thereby develop information useful in designing future roads and maintaining established pavements.
5. Supplement information from other maps, reports, and aerial photographs for the purpose of making maps and reports that can be used readily by engineers.

Engineers of the Soil Conservation Service collaborated with soil scientists in preparing this chapter. It is intended to combine their knowledge of the soils with information obtained from laboratory tests and field experience so that soil conditions can be interpreted appropriately for engineers in the county.

The soil maps included in this report and the corresponding interpretations are necessarily generalized. To try to present *all* soil conditions and their related properties would make the report unwieldy and would reduce its value. *It is not intended that the information in this report will be adequate, without further tests and sampling, for the design and construction of specific engineering jobs. On many construction sites major soil variations occur within the depth and extent of the proposed excavation. Information in this report can best be used to plan detailed soil investigations of the construction site.*

This section contains three tables. Table 14 gives a brief description of the soils and their estimated physical properties; table 15 gives estimates of the suitability of the soils for construction and conservation engineering; and table 16 gives test data for representative soil profiles from Meriwether County. The engineering interpretations made in this section are based on the results of tests shown in table 16. The properties of all the soils in the county were estimated directly or by interpolation or extrapolation based on the text data.

In addition to the information given in this section, other information valuable to engineers is included in the text. The reader should refer to the brief section on "How Soils are Mapped and Classified," and to the section "Description of the Soils." The main part of the report contains terminology that is applicable to soils used for agriculture, but this same terminology can be valuable in engineering use if it is clearly understood. The meaning of such terms as "silt," "parent material," and "soil structure" can be found in the Glossary at the back of the report.

Engineering classification systems

The United States Department of Agriculture system of classifying soil texture is used by agricultural scientists. In this system, classes of soil texture are based on different combinations of sand (2.0 to 0.05 millimeters in diameter), silt (0.05 to 0.002 millimeter in diameter), and clay (less than 0.002 millimeter in diameter). The classes in order of increasing proportions of fine particles are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay.

[8] D. L. PAYNE, agricultural engineer, Soil Conservation Service, assisted in the preparation of this section.

TABLE 14.—*Engineering descriptions of the*

Map symbol	Soil name[1]	Depth to high water table	Depth to bedrock	Brief site and soil description	Depth from surface
		Feet	*Feet*		*Inches*
Alm	Alluvial land.	2	10+	Moderately well drained to poorly drained, mixed alluvial material composed mainly of sandy loam or loamy sand; these soils of first bottoms are flooded each year; they have slopes of 0 to 2 percent.	0–36+
Alp	Alluvial land, moderately wet.	1	10+		
Avp	Alluvial land, wet.	0	10+		
AkB	Altavista fine sandy loam, 2 to 6 percent slopes.	3	15+	Moderately well drained soil on low stream terraces; the uppermost 6 to 10 inches is fine sandy loam and overlies about 3 feet of mottled, friable sandy clay loam.	0–8 8–40 40–46+
ApB	Appling loamy sand, 2 to 6 percent slopes.	20	3–6	Well-drained soils on uplands; the uppermost 6 to 12 inches of loamy sand or 4 to 6 inches of sandy clay loam overlies 2 to 3 feet of mottled, strong-brown, friable sandy clay to clay; beneath this is weathered residuum from granite, gneiss, and schist.	0–11 11–50 50–64+
ApB2	Appling loamy sand, 2 to 6 percent slopes, eroded.				
ApC2	Appling loamy sand, 6 to 10 percent slopes, eroded.				
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded.				
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded.				
AnC4	Appling-Gullied land complex, 6 to 10 percent slopes.				
Afs	Augusta sandy loam.	1	10+	Somewhat poorly drained soil on low stream terraces; the uppermost 5 to 10 inches of sandy loam overlies 2 to 3 feet of mottled, friable sandy clay loam; beneath this is 2 to 10 feet of variable alluvium; the slopes are between 0 and 2 percent.	0–7 7–30 30–50+
BcB2	Braddock sandy loam, 2 to 6 percent slopes, eroded.	20	10+	Well-drained soils in old colluvium from Pine Mountain; the uppermost 6 to 12 inches of sandy loam to sandy clay loam overlies 2 to 5 feet of red, friable to firm clay to clay loam; beneath this is 2 to 10 feet of weathered residuum from schist and gneiss.	0–10 10–46 46–60
BcC2	Braddock sandy loam, 6 to 10 percent slopes, eroded.				
BcD2	Braddock sandy loam, 10 to 15 percent slopes, eroded.				
BcE2	Braddock sandy loam, 15 to 25 percent slopes, eroded.				
BdC3	Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded.				
BdD3	Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded.				
Bfs	Buncombe loamy sand.	5	20+	Somewhat excessively drained soil on flood plains along the larger streams; the texture is loamy sand to a depth of more than 4 feet; the slopes are between 0 and 4 percent.	0–48+
CYB	Cecil sandy loam, 2 to 6 percent slopes.	20	10+	Well-drained soils on uplands; the uppermost 5 to 10 inches of sandy loam or 4 to 6 inches of sandy clay loam overlies 2 to 4 feet of red, firm clay to clay loam; beneath this is 2 to 10 feet of weathered residuum from gneiss, schist, and granite.	0–6 6–37 37–50+
CYB2	Cecil sandy loam, 2 to 6 percent slopes, eroded.				
CYC	Cecil sandy loam, 6 to 10 percent slopes.				
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded.				
CYD2	Cecil sandy loam, 10 to 15 percent slopes, eroded.				
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded.				
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded.				
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded.				
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded.				

See footnote at end of table.

soils and their estimated physical properties

Classification			Percentage passing sieve—			Permeability	Structure	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)	*Inches per hour*		*Inches per inch of depth*	*pH value*	
Loamy sand to sandy loam.	SM	A-2	95–100	95–100	20–30	2. 5–5. 0	Single grain to granular.	0. 15	5. 1–5. 5	Low.
Fine sandy loam.	SM	A-2 or A-4	95–100	95–100	30–50	0. 8–2. 5	Granular	. 12	5. 1–5. 5	Low.
Sandy clay loam.	SC, CL	A-4 or A-6	95–100	95–100	40–60	0. 2–0. 8	Subangular blocky.	. 13	5. 1–5. 5	Moderate.
Clay	CL, CH	A-6 or A-7	95–100	95–100	60–80	0. 05–0. 2	Massive	. 13	4. 5–5. 0	Moderate to high.
Loamy sand	SM	A-2	90–100	80–95	20–30	2. 5–5	Granular	. 12	5. 1–5. 5	Low.
Clay or sandy clay.	MH	A-7	95–100	90–100	55–75	0. 2–0. 8	Subangular blocky.	. 13	5. 1–5. 5	Moderate.
Sandy clay loam to sandy loam.	SM, ML	A-4	95–100	95–100	40–60	0. 2–0. 8	Massive	. 13	5. 1–5. 5	Moderate.
Sandy loam	SM	A-4	95–100	95–100	35–50	2. 5–5	Granular	. 13	4. 5–5. 0	Low.
Silty clay loam.	ML	A-4	95–100	95–100	50–75	0. 8–2. 5	Subangular blocky.	. 14	4. 5–5. 0	Moderate.
Sandy clay loam.	ML, CL	A-4 or A-6	95–100	95–100	60–80	0. 8–2. 5	Massive	. 14	4. 5–5. 0	Moderate.
Sandy loam	SM, SC	A-2 or A-4	90–100	80–95	30–50	2. 5–5. 0	Granular	. 13	5. 1–5. 5	Low.
Clay to clay loam.	CL, MH	A-7 or A-6	95–100	90–100	55–75	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Moderate to high.
Sandy loam to sandy clay loam.	SM, ML	A-4 or A-6	90–100	85–95	40–70	0. 8–2. 5	Massive	. 13	5. 1–5. 5	Moderate.
Loamy sand	SM	A-2	100	95–100	20–35	2. 5–10	Granular	. 07	5. 1–5. 5	Low.
Sandy loam	SM	A-4	90–100	80–95	35–50	2. 5–5	Granular	. 13	5. 1–5. 5	Low.
Clay to clay loam.	CL, MH	A-7 or A-6	95–100	90–100	55–75	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Moderate to high.
Clay loam	CL	A-6	95–100	90–100	50–70	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Moderate.

TABLE 14.—*Engineering descriptions of the soils*

Map symbol	Soil name[1]	Depth to high water table	Depth to bedrock	Brief site and soil description	Depth from surface
		Feet	*Feet*		*Inches*
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes.				
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes.				
Csl	Chewacla silt loam.	1	10+	Somewhat poorly drained soil or first bottoms; the uppermost 4 to 8 inches of silt loam overlies about 2 feet of very friable sandy loam; beneath this is variable alluvium; the slopes are between 0 and 2 percent.	0–5 5–30 30–52+
CgC	Cobbly and gravelly land, sloping.	20	2	Somewhat excessively drained soils on Pine Mountain; the uppermost 2 to 3 feet of soil material is 30 to 70 percent cobblestones and pebbles; beneath this is partly weathered sandstone.	0–26+
CgD	Cobbly and gravelly land, strongly sloping.				
CgE	Cobbly and gravelly land, steep.				
CpB	Colfax sandy loam, overwash, 2 to 6 percent slopes.	1	6+	Somewhat poorly drained soils around the heads of draws or on lower slopes; the uppermost 6 to 15 inches of sandy loam or loamy sand overlies about 2 feet of friable, mottled sandy clay loam; beneath this is weathered residuum from granite and gneiss.	0–15 15–38 38–42+
ClB	Colfax loamy coarse sand, 2 to 6 percent slopes.				
ClC	Colfax loamy coarse sand, 6 to 10 percent slopes.				
ClC2	Colfax loamy coarse sand, 6 to 10 percent slopes, eroded.				
DgB2	Davidson loam, 2 to 6 percent slopes, eroded.	20	10+	Well-drained soils on uplands; the uppermost 5 to 10 inches of loam or clay loam overlies 3 to 6 feet of dark-red firm clay; beneath this is 2 to 10 feet of residuum from diorite and hornblende.	0–6 6–60 60–72+
DgC2	Davidson loam, 6 to 10 percent slopes, eroded.				
DgE2	Davidson loam, 15 to 25 percent slopes, eroded.				
DhB3	Davidson clay loam, 2 to 6 percent slopes, severely eroded.				
DhC3	Davidson clay loam, 6 to 10 percent slopes, severely eroded.				
DhD3	Davidson clay loam, 10 to 15 percent slopes, severely eroded.				
HDB	Habersham gravelly loamy sand, 2 to 6 percent slopes.	20	2–6	Well-drained soils on Pine Mountain; the uppermost 5 to 12 inches of loamy sand or sandy clay loam overlies 18 to 36 inches of friable, red clay loam to clay; beneath this is 1 to 3 feet of highly weathered sandstone.	0–11 11–34 34–40+
HDC	Habersham gravelly loamy sand, 6 to 10 percent slopes.				
HDD	Habersham gravelly loamy sand, 10 to 15 percent slopes.				
HCC3	Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded.				
IbB2	Iredell sandy loam, 2 to 6 percent slopes, eroded.	1	6	Moderately well drained soil on uplands; the uppermost 5 to 9 inches of sandy loam overlies about 1 foot of extremely heavy and plastic clay; beneath this is residuum from diorite and hornblende gneiss; the slopes are between 2 and 6 percent, and this soil is eroded.	0–9 9–20 20–36+
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded.	20	10+	Well-drained soils on uplands; the uppermost 4 to 8 inches of sandy loam to clay loam overlies 3 to 4 feet of friable clay; beneath this is 2 to 6 feet of residuum from diorite, hornblende, gneiss, and schist.	0–5 5–44 44–50+
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded.				
LdD2	Lloyd sandy loam, 10 to 15 percent percent slopes, eroded.				
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded.				
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded.				

See footnote at end of table.

and their estimated physical properties—Continued

Classification			Percentage passing sieve—			Permeability	Structure	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
						Inches per hour		*Inches per inch of depth*	*pH value*	
Silt loam	ML	A-4	95–100	95–100	55–80	0. 8–2. 5	Granular	. 13	5. 1–5. 5	Low.
Sandy loam to sandy clay loam.	SM, SC, CL.	A-4 or A-6	95–100	95–100	40–70	0. 8–2. 5	Granular to blocky.	. 14	5. 1–5. 5	Low to moderate.
Clay	CL, CH	A-6 or A-7	95–100	95–100	60–90	0. 2–0. 8	Subangular blocky.	. 13	5. 1–5. 5	Moderate to high.
Cobbly and gravelly loamy sand.	GW, GM	A-1	30–50	20–35	2–15	5–10	Granular	. 04	5. 1–5. 5	Low.
Sandy loam to loamy coarse sand.	SM	A-2 or A-4	95–100	90–100	20–40	2. 5–5	Granular	. 11	4. 5–5. 0	Low.
Sandy clay loam.	CL, ML	A-4 or A-6	95–100	90–100	50–75	0. 2–0. 8	Subangular blocky.	. 13	4. 5–5. 0	Moderate.
Sandy loam to sandy clay loam.	SM, ML	A-4	95–100	90–100	40–60	0. 8–2. 5	Massive	. 11	4. 5–5. 0	Low to moderate.
Loam	ML, CL	A-4 or A-6	95–100	90–100	50–70	0. 8–2. 5	Granular	. 1	5. 1–5. 5	Moderate.
Clay to silty clay.	MH, CH	A-7	95–100	95–100	60–80	0. 2–2. 5	Subangular blocky.	. 1	5. 1–5. 5	High.
Silty clay loam to sandy clay loam.	SC, CL	A-6 or A-7	95–100	95–100	40–70	0. 2–2. 5	Massive	. 1	5. 1–5. 5	Moderate to high.
Gravelly loamy sand.	SM	A-1 or A-2	55–75	50–70	15–30	5–10	Granular	. 11	5. 1–5. 5	Low.
Clay loam	ML, CL	A-4 or A-6	95–100	85–95	70–80	0. 8–2. 5	Subangular blocky.	. 12	5. 1–5. 5	Moderate.
Sandy loam	ML	A-4	95–100	90–100	60–80	0. 8–2. 5	Massive	. 12	5. 1–5. 5	Moderate.
Sandy loam	SM	A-4	95–100	85–100	35–50	0. 2–0. 8	Granular	. 12	5. 6–6. 0	Low.
Clay	CH	A-7	95–100	90–100	60–90	(2)	Angular blocky.	. 12	4. 5–5. 0	Very high.
Sandy clay loam to clay.	CH, MH	A-7	95–100	90–100	55–80	0. 05–0. 2	Massive	. 12	4. 5–5. 0	High.
Sandy loam	SM, SC	A-4 or A-2	85–100	75–95	30–50	0. 8–2. 5	Granular	. 11	5. 1–5. 5	Low to moderate.
Clay to sandy clay loam.	MH, ML, CL.	A-4 or A-7	95–100	95–100	60–80	0. 2–0. 8	Subangular blocky.	. 12	5. 1–5. 5	Moderate to high.
Silty clay loam to loam.	ML, SM	A-4 or A-7	95–100	95–100	40–70	0. 2–2. 5	Subangular blocky.	. 12	5. 1–5. 5	Moderate to high.

TABLE 14.—*Engineering descriptions of the soils*

Map symbol	Soil name[1]	Depth to high water table	Depth to bedrock	Brief site and soil description	Depth from surface
		Feet	*Feet*		*Inches*
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded.				
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded.				
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes.				
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes.				
Lcm	Local alluvial land.	5	15+	Well drained to moderately well drained soil in slight depressions or around the heads of draws; the uppermost 2 feet of sandy loam overlies 2 to 4 feet of sandy loam to sandy clay loam; the slopes are between 0 and 2 percent.	0–24+
LEC	Louisa coarse sandy loam, 6 to 10 percent slopes.	20	10+	Somewhat excessively drained soils on uplands; the uppermost 4 to 12 inches of sandy loam overlies 1 to 10 feet of residuum from mica schist.	0–10
LED	Louisa coarse sandy loam, 10 to 15 percent slopes.				10–36+
LEE	Louisa coarse sandy loam, 15 to 25 percent slopes.				
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes.	20	1	Somewhat excessively drained soils on uplands; the uppermost 3 to 10 inches of loamy sand overlies 0 to 20 inches of weathered granite; beneath this is hard granitic rock.	0–6
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes.				6–32
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes.				32+
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes.				
LDD	Louisburg stony loamy coarse sand, 10 to 15 percent slopes.				
LDE	Louisburg stony loamy coarse sand, 15 to 25 percent slopes.				
MgB2	Madison sandy loam, 2 to 6 percent slopes, eroded.	20	10+	Well-drained soils on uplands; the uppermost 4 to 8 inches of sandy loam or sandy clay loam overlies 18 to 36 inches of friable clay loam; beneath this is 2 to 10 feet of residuum from mica schist.	0–6
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded.				6–38
MgD2	Madison sandy loam, 10 to 15 percent slopes, eroded.				38–48+
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded.				
MIB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded.				
MIC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded.				
MID3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded.				
MIE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded.				
MIC4	Madison-Gullied land complex, 6 to 10 percent slopes.				
MID4	Madison-Gullied land complex, 10 to 15 percent slopes.				
MvC3	Musella clay loam, 2 to 10 percent slopes, severely eroded.	20	1–2	Well-drained soils on uplands; the uppermost 12 to 20 inches of friable clay loam overlies 0 to 20 inches of weathered diorite that has a texture of clay loam; some areas are stony.	0–5
MvD2	Musella clay loam, 10 to 15 percent slopes, eroded.				5–16
MvD3	Musella clay loam, 10 to 15 percent slopes, severely eroded.				16–28+
MEF2	Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded.				

See footnote at end of table.

and their estimated physical properties—Continued

Classification			Percentage passing sieve—			Permeability	Structure	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)	*Inches per hour*		*Inches per inch of depth*	*pH value*	
Sandy loam	SM, SC	A-2 or A-4	95–100	90–100	20–40	2. 5–5. 0	Single grain to granular.	. 15	5. 1–5. 5	Low.
Coarse sandy loam.	SM, SC	A-2 or A-4	90–100	75–95	25–40	2. 5–5. 0	Granular	. 1	5. 1–5. 5	Low.
Loamy coarse sand to sandy clay loam.	SM, ML	A-4	95–100	85–100	40–60	2. 5–5. 0	Massive	. 1	5. 1–5. 5	Low to moderate.
Loamy coarse sand.	SM	A-2	90–100	85–100	15–30	2. 5–5. 0	Granular	. 1	5. 1–5. 5	Low.
Loamy coarse sand to sandy loam. Unweathered granite.	SM	A-2 or A-4	90–100	85–100	25–45	2. 5–5. 0	Granular to massive.	. 1	5. 1–5. 5	Low.
Sandy loam	SM, SC	A-2 or A-4	90–100	85–100	25–50	2. 5–5. 0	Granular	. 13	5. 1–5. 5	Low.
Clay loam	CL, MH	A-7 or A-6	95–100	90–100	60–70	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Moderate.
Loamy sand to sandy clay loam.	SM, SC, CL	A-4 or A-6	95–100	85–100	35–55	2. 5–5. 0	Massive	. 11	5. 1–5. 5	Low.
Clay loam	ML, CL	A-6	90–100	85–95	50–65	0. 8–2. 5	Subangular blocky.	. 11	5. 1–5. 5	Moderate.
Clay loam	MH	A-7	75–100	75–100	50–85	0. 2–2. 5	Subangular blocky.	. 12	5. 1–5. 5	Moderate to high.
Clay loam	ML, CL	A-5 or A-7	85–100	85–100	55–70	0. 8–2. 5	Massive	. 13	5. 1–5. 5	Moderate.

TABLE 14.—*Engineering descriptions of the soils*

Map symbol	Soil name[1]	Depth to high water table	Depth to bedrock	Brief site and soil description	Depth from surface
		Feet	*Feet*		*Inches*
Ron	Roanoke silt loam.	0	10+	Poorly drained soil on low stream terraces; the uppermost 7 to 14 inches of silt loam to sandy loam overlies 1 to 3 feet of gray, wet, extremely firm clay; beneath this is variable alluvium; the slopes are between 0 and 2 percent.	0–10 10–30 30–41+
TkB	Thurmont loamy sand, 2 to 6 percent slopes.	20	6+	Well-drained soils in old colluvium from Pine Mountain; the uppermost 4 to 9 inches of loamy sand overlies 18 to 36 inches of friable clay loam; beneath this is a gravelly layer.	0–6 6–29 29–33+
TkC	Thurmont loamy sand, 6 to 10 percent slopes.				
TkD	Thurmont loamy sand, 10 to 15 percent slopes.				
VdB2	Vance loamy coarse sand, 2 to 6 percent slopes, eroded.	20	3	Moderately well drained soils on uplands; the uppermost 4 to 7 inches of loamy sand or sandy clay loam overlies 1 to 3 feet of plastic, very firm clay; beneath this is 1 to 3 feet of residuum from granite, geniss, and schist.	0–6 6–26 26–60+
VdC2	Vance loamy coarse sand, 6 to 10 percent slopes, eroded.				
VdD2	Vance loamy coarse sand, 10 to 15 percent slopes, eroded.				
VbC3	Vance sandy clay loam, 6 to 10 percent slopes, severely eroded.				
Weh	Wehadkee silty clay loam.	0	15+	Poorly drained soil on first bottoms; the uppermost 3 feet of gray silty clay loam is wet; it overlies variable alluvium; the slopes are between 0 and 2 percent.	0– 7 7–37+
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded.	20	10+	Well-drained soils on high stream terraces; the uppermost 5 to 8 inches of sandy loam or sandy clay loam overlies 2 to 5 feet of red, firm clay to clay loam; beneath this is water-rounded gravel or residuum from schist.	0–6 6–43 43–48+
WgC2	Wickham fine sandy loam, 6 to 10 percent slopes, eroded.				
WnC3	Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded.				
WoB	Worsham coarse sandy loam, 2 to 6 percent slopes.	0	5	Poorly drained soil in upland depressions; the uppermost 4 to 8 inches of sandy loam overlies 15 to 36 inches of gray, extremely firm clay that is commonly wet; beneath this is residuum from gneiss and granite; the slopes are between 2 and 6 percent.	0–7 7–28 28–36+

[1] Gullied land and Rock land are not rated.
[2] 0.05 or less.

TABLE 15.—*Interpretation of engineering*

Soil series and map symbols[1]	Suitability of soil material as source of—			Features affecting the location of highways	Features affecting soil for conservation work with—
	Topsoil	Sand[2]	Road fill		Farm ponds Reservoir area
Alluvial land (Alm, Alp, Avp)	Good	Fair to good	Fair to good	High water table; subject to flooding.	Variable seepage and permeability.
Altavista (AkB)	Surface layer good.	Surface layer fair.	Good; fair below a depth of 3 to 4 feet.	High strength and and stability.	Moderate permeability; slow seepage.

See footnotes at end of table.

and their estimated physical properties—Continued

Classification			Percentage passing sieve—			Permeability	Structure	Available water capacity	Reaction	Shrink-swell potential
Dominant USDA texture	Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)	*Inches per hour*		*Inches per inch of depth*	*pH value*	
Silty loam to sandy loam.	ML, CL	A-4	95–100	90–100	40–65	0. 2–0. 8	Granular	0. 13	5. 1–5. 5	Low.
Clay to sandy clay.	CL, CH	A-6 or A-7	95–100	95–100	80–95	0. 05–0. 2	Subangular blocky.	. 13	5. 1–5. 5	Moderate to high.
Sandy clay loam.	SC, CL	A-4 or A-6	95–100	85–95	40–70	0. 2–0. 8	Subangular blocky.	. 12	5. 1–5. 5	Moderate.
Loamy sand	SM	A-2 or A-4	80–95	70–85	25–40	2. 5–5	Granular	. 12	5. 1–5. 5	Low.
Clay loam	ML	A-5	95–100	90–95	50–75	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Low to moderate.
Gravelly clay	ML	A-4, A-5 or A-7.	87–100	87–97	50–75	0. 8–2. 5	Massive	. 13	5. 1–5. 5	Low to moderate.
Loamy coarse sand.	SM	A-2	85–95	75–90	15–35	2. 5–5	Granular	. 12	4. 5–5. 0	Low.
Clay	CL, CH	A-7	90–100	85–95	60–80	. 05–0. 2	Blocky	. 13	4. 5–5. 0	Moderate to high.
Sandy clay loam.	SC, CL	A-4 or A-6	95–100	90–100	40–60	0. 2–0. 8	Massive	. 11	4. 5–5. 0	Low to moderate.
Silty clay loam.	CL, CH	A-6 or A-7	95–100	95–100	80–100	0. 2–0. 8	Massive	. 12	4. 5–5. 0	Moderate to high.
Silty clay loam.	CL, CH	A-6 or A-7	95–100	90–100	70–95	0. 05–0. 2	Massive	. 12	4. 5–5. 0	Moderate to high.
Fine sandy loam.	SM, SC	A-4	90–100	85–95	35–50	2. 5–5	Granular	. 13	5. 1–5. 5	Low to moderate.
Clay loam	CL, MH	A-7	95–100	90–100	55–75	0. 8–2. 5	Subangular blocky.	. 13	5. 1–5. 5	Moderate to high.
Gravelly clay	GM, GC	A-2	65–90	50–70	20–35	0. 8–2. 5	Massive	. 1	5. 1–5. 5	Low to moderate.
Coarse sandy loam.	SM	A-2	90–100	85–95	20–35	2. 5–5	Granular	. 1	5. 1–5. 5	Low.
Clay	CL, CH	A-6 or A-7	90–100	80–95	50–80	0. 05–0. 2	Subangular blocky.	. 11	5. 1–5. 5	Moderate to high.
Sandy clay loam.	CL	A-4 or A-6	90–100	85–100	50–70	0. 05–0. 2	Massive	. 11	5. 1–5. 5	Moderate.

properties of the soils

Features affecting soil for conservation work with—Continued					Features affecting suitability for sewage disposal field
Farm ponds—Continued	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Embankment					
Variable permeability; high strength and stability.	Moderate to rapid permeability; outlets not available in all places.	Soils are level; intake rate, permeability, and available moisture capacity are moderate to high.	Not needed	Not needed	High water table; subject to flooding.
Moderate strength and stability; impervious when compacted.	Not needed	Intake rate, permeability, and available moisture capacity are moderate to high.	Moderately erodible.	Moderately erodible.	Moderate permeability; moderately high water table in wettest seasons.

TABLE 15.—*Interpretation of engineering*

Soil series and map symbols[1]	Suitability of soil material as source of—			Features affecting the location of highways	Features affecting soil for conservation work with—
	Topsoil	Sand[2]	Road fill		Farm ponds: Reservoir area
Appling (ApB, ApB2, ApC2, AnC3, AnD3, AnC4).	Surface layer good if the soil is not severely eroded.	Surface layer good if the soil is not severely eroded.	Good; fair below a depth of 1 foot.	High strength and stability. Shallow to bedrock in places.	Moderate permeability; slow seepage.
Augusta (Afs)	Surface layer fair	Poor	Poor	High water table	Slow permeability and seepage.
Braddock (BcB2, BcC2, BcD2, BcE2, BdC3, BdD3).	Surface layer good if the soil is not severely eroded.	Surface layer fair if the soil is not severely eroded.	Fair	High strength and stability.	Moderate permeability; slow seepage.
Buncombe (Bfs)	Good	Good	Good; gentle slopes needed; easily eroded.	High strength and stability; subject to occasional flooding.	Rapid permeability and seepage.
Cecil (CYB, CYB2, CYC, CYC2, CYD2, CZB3, CZC3, CZD3, CZE3, CZC4, CZD4).	Surface layer good if the soil is not severely eroded.	Poor	Fair	High strength and stability.	Moderate permeability, slow seepage.
Chewacla (Csl)	Good	Poor; variable texture.	Fair to good to a depth of about 3 feet; poor below that depth.	High water table; subject to flooding; poor stability.	Slow seepage
Cobbly and gravelly land (CgC, CgE, CgD).	Poor because of cobblestones and gravel.	Good	Good	Moderate stability and strength; shallow to bedrock.	Rapid permeability and seepage.
Colfax (CIB, CIC, CIC2, CpB)	Surface layer good, but moderately high water table.	Surface layer fair.	Fair	High water table; moderate stability.	Moderate to slow seepage and permeability.
Davidson (DgB2, DgC2, DgE2, DhB3, DhC3, DhD3).	Surface layer poor	Unsuitable; fine-textured material.	Fair; high shrink-swell and plasticity.	High shrink-swell and plasticity.	Moderate seepage and permeability.
Habersham (HDB, HDC, HDD, HCC3).	Surface layer fair to good because of gravel; poor if severely eroded.	Surface layer good if the soil is not severely eroded.	Good, but soils are shallow to bedrock where severely eroded.	High strength and stability; shallow to bedrock.	Moderate permeability; slow seepage.
Iredell (IbB2)	Poor	Unsuitable; sticky, plastic subsoil.	Unsuitable; high shrink-swell and plasticity.	High water table and shrink-swell; plastic; unstable slopes.	Slow seepage and permeability.

See footnotes at end of table.

properties of the soils—Continued

Features affecting soil for conservation work with—Continued					Features affecting suitability for sewage disposal field
Farm ponds—Continued	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Embankment					
Moderate strength and stability; impervious when compacted.	Not needed	Slopes are 2 to 15 percent; permeability is moderate; intake rate is rapid to slow.	Moderately erodible; slopes are 2 to 15 percent.	Moderately erodible; slopes are 2 to 15 percent.	Moderate permeability.
Moderate shrink-swell; impervious when compacted.	Moderate to slow permeability.	Soil is level; intake rate and available moisture capacity are medium to high.	Not needed	Not needed	High water table; slow permeability.
Impervious when compacted; moderate strength and stability.	Not needed	Slopes are 2 to 25 percent; intake rate, permeability, and available moisture capacity are moderate to high if soils are not severely eroded.	Moderately erodible.	Moderately erodible.	Moderate permeability.
Moderately pervious when compacted; moderate strength and stability.	Not needed	Available moisture capacity is low; intake rate is rapid.	Not needed	Not needed	Rapid permeability; subject to flooding.
High strength and stability; impervious when compacted.	Not needed	Intake rate, permeability, and available moisture capacity are moderate to high if the soil is not severely eroded; slopes are 2 to 25 percent.	Moderately erodible.	Moderately erodible.	Moderate permeability.
Low stability; variable material.	Moderate to slow permeability; seasonally high water table.	Soil is level; intake rate and available moisture capacity are moderate to high.	Not needed	Not needed	High water table; subject to flooding.
Soil material cobbly, gravelly, and very permeable.	Not needed	Available moisture capacity is very low; intake rate is very rapid.	Shallow depth; cobbly, gravelly material.	Not needed	Shallow to rock; cobbly, gravelly; rapid permeability.
Impervious when compacted; moderate stability.	Seasonally high water table; moderate permeability.	Intake rate is rapid; available moisture capacity is high; soil productivity is low.	Not needed	Not needed	High water table; permeability is slow to moderate.
Low stability; high shrink-swell; moderately pervious when compacted.	Not needed	Intake rate is slow; available moisture capacity is moderate; slopes are 2 to 25 percent.	Soil properties favorable; few limitations.	Soil properties favorable; few limitations.	Moderate permeability.
High strength and stability; impervious when compacted.	Not needed	Intake rate and available moisture capacity are moderate to high if the soil is not severely eroded.	Soil properties favorable; moderately erodible.	Moderately erodible.	Moderate permeability; shallow to rock if the soil is severely eroded.
High shrink-swell; low stability.	Not needed	Impervious subsoil; soil productivity is low.	Highly erodible; extremely heavy, plastic subsoil.	Highly erodible; extremely heavy, plastic subsoil.	Impervious subsoil; high water table.

TABLE 15.—*Interpretation of engineering*

Soil series and map symbols[1]	Suitability of soil material as source of—			Features affecting the location of highways	Features affecting soil for conservation work with—
	Topsoil	Sand[2]	Road fill		Farm ponds: Reservoir area
Lloyd (LdB2, LdC2, LdD2, LeB3, LeC3, LeD3, LeE3, LeC4, LeD4).	Surface layer fair if the soil is not severely eroded.	Surface layer fair if the soil is not severely eroded.	Fair	Moderately high shrink-swell and plasticity.	Moderate seepage and permeability.
Local alluvial land (Lcm)	Good	Fair	Good	Moderate to high stability and strength.	Moderate permeability and seepage.
Louisa (LEC, LED, LEE)	Good	Surface layer fair	Good to fair	Moderate strength and stability; shallow to weathered bedrock in places.	Moderate permeability and seepage; steep slopes.
Louisburg (LCB, LCC, LCD, LDC, LDD, LDE).	Good except in stony areas.	Good except in stony areas.	Good, but shallow	Boulders and bedrock near surface.	Variable seepage and permeability.
Madison (MgB2, MgC2, MgD2, MgE2, MlB3, MlC3, MlD3, MlE3, MlC4, MlD4).	Surface layer good if the soil is not severely eroded.	Surface layer fair if the soil is not severely eroded.	Fair	High strength and stability.	Moderate permeability; slow seepage.
Musella (MvC3, MvD2, MvD3, MEF2).	Poor	Poor; shallow to bedrock.	Poor; plastic material and shallow to bedrock.	High shrink-swell; plastic; shallow to bedrock.	Moderate seepage and permeability.
Roanoke (Ron)	Poor; high water table.	Poor	Poor; plastic material.	High water table and subject to flooding; moderate stability.	Slow seepage and permeability.
Thurmont (TkB, TkC, TkD)	Surface layer good	Surface layer fair	Good	Moderate stability.	Slow seepage; moderate permeability.
Vance (VdB2, VdC2, VdD2, VbC3).	Fair	Poor because layer of good material is thin.	Moderate to high shrink-swell and plasticity.	Moderate to high plasticity and shrink-swell; shallow to bedrock.	Slow seepage and permeability.
Wehadkee (Weh)	Poor; high water table; fine-textured material.	Poor; fine-textured material.	Poor; moderate to high shrink-swell and plasticity.	High water table; moderate to high shrink-swell and plasticity; subject to flooding.	Slow seepage and permeability.
Wickham (WgB2, WgC2, WnC3).	Surface layer good if the soil is not severely eroded.	Surface layer good if the soil is not severely eroded.	Good	High strength and stability; high plasticity and shrink-swell in the subsoil.	Moderate permeability; slow seepage.
Worsham (WoB)	Poor; high water table.	Poor	Poor	High water table; high strength and stability.	Slow seepage and permeability.

[1] Gullied land and Rock land are not suitable for any engineering practices.

properties of the soils—Continued

Features affecting soil for conservation work with—Continued					Features affecting suitability for sewage disposal field
Farm ponds—Continued	Agricultural drainage	Irrigation	Terraces and diversions	Waterways	
Embankment					
Moderate to high shrink-swell and plasticity; moderately pervious when compacted; low stability.	Not needed	Intake rate is slow if the soil is severely eroded, moderate if not; moderate available moisture capacity.	Moderately erodible.	Moderately erodible.	Moderate permeability.
Impervious when compacted; moderate to high stability.	Not needed	Intake rate is rapid; available moisture capacity is high.	Soil properties favorable, but terraces and diversions not needed in most places.	Soil properties favorable, but waterways not needed in most places.	Moderate permeability.
Moderate stability	Not needed	Low available moisture capacity; soil productivity is low.	Moderately erodible; steep slopes.	Moderately erodible; steep slopes.	Moderate to rapid permeability.
Bedrock, stones, and boulders are near the surface.	Not needed	Low available moisture capacity; soil production is low.	Stones, boulders, and bedrock are near the surface.	Stones, boulders, and bedrock are near the surface.	Shallow to rock.
Impervious when compacted; high stability.	Not needed	Intake rate and available moisture capacity high; slopes are 2 to 25 percent.	Moderately erodible; slopes are 2 to 25 percent.	Moderately erodible; slopes are 2 to 25 percent.	Moderate permeability.
Low stability and high shrink-swell; moderately pervious when compacted.	Not needed	Intake rate is slow; soil productivity is low.	Moderately erodible; shallow to bedrock.	Moderately erodible; shallow to bedrock.	Shallow to bedrock; slow to moderate permeability.
Moderate shrink-swell	Slowly permeable subsoil; outlets not available in all areas.	Intake rate is slow; soil productivity is low.	Not needed	Not needed	High water table; slow permeability; subject to flooding.
Impervious when compacted; moderate strength and stability.	Not needed	High intake rate and high available moisture capacity.	Moderately erodible.	Moderately erodible.	Moderate permeability.
Impervious when compacted; moderate to high shrink-swell.	Not needed	High intake rate; slow permeability; soil productivity is low.	Moderately erodible.	Moderately erodible.	Slow permeability.
Impervious when compacted; moderate to high shrink-swell.	Slow permeability; high water table; outlets not available.	Slow intake rate; high available moisture capacity.	Not needed	Not needed	High water table; subject to flooding.
Impervious when compacted; high stability.	Not needed	High intake rate and high available moisture capacity.	Moderately erodible.	Moderately erodible.	Moderate permeability.
Impervious when compacted; high water table.	Slow permeability of subsoil; inadequate outlets; high water table.	Slow permeability; soil productivity is low.	Not needed	Not needed	High water table; slow permeability.

[2] Refers to soil material used as subbase immediately beneath a concrete or asphalt paving; it is not suitable for use as a constituent of concrete.

TABLE 16.—*Engineering test data* [1] *for*

Soil name and location	Parent material	Georgia report No. S-60-Ga-	Depth	Horizon	Moisture-density [2]		Volume change [3]		
					Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
			Inches		*Lb. per cu. ft.*	*Percent*	*Percent*	*Percent*	*Percent*
Augusta sandy loam:									
9 miles NW. of Greenville. (Modal profile.)	Alluvium on low terraces.	16-1	0-8	Ap	100	18	6.8	15.2	22.0
		16-3	13-30	B2g	110	15	4.9	7.7	12.6
		16-4	30-39	C1g	117	13	5.9	2.1	8.0
2 miles SE. of Alvaton. (Some characteristics of Roanoke soils.)	Alluvium on low terraces.	17-1	0-4	Ap	103	18	7.2	22.4	29.6
		17-3	10-30	B22g	98	22	12.0	12.3	24.3
		17-5	48-72	C1g	97	24	18.4	3.8	22.2
0.5 mile E. of Alvaton. (Some characteristics of Altavista soils.)	Alluvium on low terraces.	18-1	0-7	Ap	121	11	1.6	3.8	5.4
		18-3	12-28	B2	112	16	11.7	1.5	13.2
		18-4	28-60	B3	105	20	11.2	7.5	18.7
Lloyd clay loam:									
4 miles NE. of Greenville. (Modal profile.)	Material from schist and diorite.	19-1	0-4	Ap	105	19	12.9	1.0	13.9
		19-2	4-55	B2	95	25	12.0	3.1	15.1
		19-4	75-90+	C	111	17	4.4	5.5	9.9
1 mile SE. of Rocky Mount. (Some characteristics of Madison soils.)	Material from schist and diorite.	20-4	7-25	B2	94	27	13.5	2.3	15.8
		20-5	25-47	B31	88	29	6.6	7.1	13.7
		20-7	64-74+	C	94	22	3.6	16.6	20.2
0.5 mile S. of Rocky Mount. (Some characteristics of Davidson soils.)	Material from mica schist, hornblende, and gneiss.	21-1	0-4	Ap	124	10	1.1	4.5	5.6
		21-2	4-40	B2	95	27	11.2	3.3	14.5
		21-4	62-84+	C	104	22	8.3	6.7	15.0
Thurmont loamy sand:									
3 miles W. of Warm Springs. (Modal profile.)	Old local alluvium.	22-1	0-5	Ap	126	10	.7	1.6	2.3
		22-3	13-26	B2	116	15	6.8	.3	7.1
		22-5	37-50+	C	116	14	5.2	2.1	7.3
2 miles W. of Warm Springs. (Some characteristics of Appling soils.)	Old local alluvium.	23-1	0-5	Ap	118	10	3.9	3.3	7.2
		23-4	16-30	B22	93	26	10.9	4.2	15.1
		23-6	38-60+	C	96	24	8.5	20.2	28.7
4 miles W. of Warm Springs. (Some characteristics of colluvial soils.)	Old local alluvium.	24-1	0-5	Ap	108	15	3.6	5.9	9.5
		24-3	14-32	B2	100	20	7.8	8.5	16.3
		24-4	32-60+	C	96	24	9.4	7.5	16.9

[1] Tests performed by the State Highway Department of Georgia, in cooperation with the U.S. Department of Commerce, Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway Officials (AASHO), except as stated in footnote 3.

[2] Based on the Moisture-density Relations of Soils Using a 5.5-lb. Rammer and a 12-inch Drop; AASHO Designation T 99-57, Method A or C, "Standard Specifications for Highway Materials and Methods of Sampling and Testing," (Pt. II, Ed. 8).

[3] Based on "A System of Soil Classification" by W. F. Abercrombie. Proceedings of the Thirty-third annual meeting of Highway Res. Board, Natl. Acad. Sci., pp. 509-514, illus. Washington, D.C., 1954.

[4] Mechanical analyses according to the AASHO Designation T 88-57. Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service. In the AASHO procedure, the fine material is analyzed by the hydrometer method

soil samples taken from 9 soil profiles

Mechanical analysis [4]										Liquid limit	Plasticity index	Classification	
Percentage passing sieve [5]—					Percentage smaller than [5]—								
3-in.	¾-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [6]	Unified [7]
			100	97	54	48	37	22	16	[8] NP	NP	A–4(4)	ML.
		100	99	74	52	49	43	29	21	NP	NP	A–4(3)	ML.
			100	82	53	49	42	30	23				
		100	97	91	58	54	47	38	28	28	6	A–4(5)	ML–CL.
		100	97	93	71	67	60	52	46	38	9	A–4(7)	ML.
			100	99	80	77	70	56	45	33	6	A–4(8)	ML.
		100	98	74	38	34	26	15	12	NP	NP	A–4(1)	SM.
			100	83	63	60	52	42	35	29	7	A–4(6)	ML–CL.
		100	98	90	66	62	55	46	41	40	21	A–6(11)	CL.
	100	98	94	83	58	54	46	36	29	28	9	A–4(5)	CL.
			100	92	79	76	73	62	53	53	22	A–7–5(15)	MH.
	100	99	96	79	57	55	50	43	36				
			100	90	73	71	67	59	53	52	8	A–5(10)	MH.
		100	99	94	69	66	62	51	45	NP	NP	A–4(7)	ML.
			100	94	48	43	33	22	18	NP	NP	A–4(3)	SM.
100	91	84	78	65	30	26	20	14	12	NP	NP	A–2–4(0)	SM.
	100	99	97	92	75	72	67	57	48	45	NP	A–5(9)	ML.
100	98	98	97	85	56	52	46	34	31	NP	NP	A–4(4)	ML.
100	96	82	71	55	32	29	18	10	7	NP	NP	A–2–4(0)	SM.
	100	97	93	75	49	44	35	22	20				
	100	96	89	74	49	44	36	26	21	26	7	A–4(3)	SM–SC.
100	97	85	78	69	35	30	19	10	7	NP	NP	A–2–4(0)	SM.
	100	98	93	90	74	72	65	53	45	41	9	A–5(8)	ML.
	100	99	96	93	72	68	59	42	33	41	NP	A–5(7)	ML.
100	98	97	96	86	52	44	27	16	12	NP	NP	A–4(3)	ML.
	100	97	93	84	71	69	63	47	38	43	9	A–5(8)	ML.
	100	99	96	87	74	71	64	49	39	43	13	A–7–5(10)	ML.

and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soils.

[5] Based on sample as received in laboratory. Laboratory test data not corrected for amount discarded in field sampling.

[6] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 8): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes. AASHO Designation M 145–49.

[7] Based on the Unified Soil Classification System. Tech. Memo. No. 3–357, v. 1, Waterways Expt. Sta., Corps of Engineers. March 1953.

[8] NP=Nonplastic.

Those with the term "sand" in the name are modified for very fine, fine, coarse, or very coarse sand. "Gravelly" refers to soils that contain gravel up to 3 inches in diameter, and "stony," to soils that contain stones more than 10 inches in diameter. Shaly soils contain flattened fragments of shale that are less than 6 inches long along the longer axis. Flaggy soils contain relatively thin fragments, 6 to 15 inches long, of sandstone, limestone, slate, or shale.

The Unified soil classification system was developed by the U.S. Army, Corps of Engineers, and is used by the Bureau of Reclamation, Department of the Interior. In this system, soil materials are identified as coarse grained, eight classes; fine grained, six classes; and highly organic soils. An approximate classification of soils by this system can be made in the field.

Many highway engineers use the system approved by the American Association of State Highway Officials. In this system, soil materials are classified in seven principal groups. The groups range from A–1, which is for gravelly soils of high bearing capacity, to A–7, which is for clay soils having low strength when wet. In each group the relative engineering value of the soil material is indicated by a group index number. Group index numbers range from 0 for the best material to 20 for the poorest. (See table 16.)

Engineering descriptions of soils

Most of the terms in table 14, which provides engineering descriptions of soils, are self explanatory, but some of them need clarification. Depth to a high water table refers to the distance, in feet, from the surface down to free water during the wettest season of the year. Depth to bedrock refers to the average distance, over most of the area, from the surface down to hard rock.

The permeability of the soil as it occurs in place was estimated. The estimates were based on soil structure and porosity and were compared with permeability tests on undisturbed cores of similar soil material. Structure refers to the arrangement of soil particles as they occur in an undisturbed soil. The available moisture capacity, in inches per inch of soil, is the approximate amount of capil-

Figure 8.—**Recently constructed dam for a farm pond on a Madison sandy loam. The spillway in the foreground is in the subsoil. The dam is a mixture of the surface layer, subsoil, and underlying material.**

lary water in the soil when wet to field capacity. When the soil material is air dry, this amount of water will wet it to a depth of 1 inch without deeper percolation. Shrink-swell potential is an estimate of the volume change to be expected of the soil material with changes in content of moisture. In general, soils classified as CH and A–7 have a high shrink-swell potential, except for the Iredell soil, which has a very high shrink-swell potential. Clean sands and gravels (single grain structure), and those that contain a small amount of nonplastic to slightly plastic soil material have a low shrink-swell potential.

Engineering interpretations of soils

Engineering interpretations of soils are given in table 15. In this table the suitability of the soils of Meriwether County is estimated for highway construction and for other specified engineering uses. Ratings are used to show the relative suitability of the soils as a source of topsoil, sand, and road fill. Suitability of the soils as a location of highways or as sites for farm ponds (fig. 8), agricultural drainage systems, irrigation systems for terraces and diversions, waterways, and sewage disposal fields, is indicated by mentioning characteristics of the soils that affect construction and use of these facilities.

Table 15 is largely self-explanatory. The column that rates the soils according to the suitability of the soil material as a source of topsoil, for example, refers to the suitability of the soil material as a topdressing for slopes, for the shoulders of roads, and for other areas that have been disturbed. The rating for suitability as a source of sand refers to the soil material used as subbase immediately beneath the pavement. Sand or gravel suitable for concrete aggregate or filter material without extensive processing is not available in quantity in any of the soils of this county.

Suitability for road fill depends on the texture, erodibility, and moisture content of the soil material, on the thickness of the deposit, and on the accessibility of the area. Normally, wet plastic clays are rated "poor." Highly erodible soils, such as silts and fine sands, are rated "poor to fair" because the soils are difficult to compact and require close moisture control during compaction. Figure 9 shows a deep cut that was not protected. Soils that are shallow over bedrock generally are rated "poor" because the quantity of material available is limited.

Soil test data

Table 16 gives results of tests on selected soil samples, made by the State Highway Department of Georgia, in cooperation with the U.S. Department of Commerce, Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO). Each soil series tested was sampled in three localities to give an approximation of its range of characteristics. The modal profiles are typical, and the nonmodal profiles represent significant variations. Nevertheless, the data probably do not show the maximum variation in the horizons of each of the soil series. All of the samples were taken at a depth of less than 8 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil materials where deep cuts are required in rolling or hilly areas.

The AASHO and Unified engineering soil classifications given in table 16 are based on data obtained by tests made to determine liquid limits and plastic limits. Mechanical analyses were made by combined sieve and hydrometer methods. In the AASHO procedure the fine material was analyzed by using the hydrometer method and the various grain-size fractions were calculated on the basis of all materials in the soil sample, including that coarser than 2 millimeters in diameter. The Soil Conservation Service uses the pipette method and excludes materials coarser than 2 millimeters in diameter from the calculations. Percentages of clay obtained by the hydrometer method are not used in naming textural classes of soils.

***Figure 9.*—Severe gullying and caving on an unprotected road cut in a Madison soil.**

The tests for liquid limit and plastic limit measure the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases from very dry, the material changes from a solid to a semisolid, and then to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Table 16 also gives compaction (moisture-density) data for the tested soils. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed "maximum dry density." Moisture-density data are important to soil en-

gineering because, generally, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

Formation, Morphology, and Classification of Soils

Soil is the product of parent material, topography, time, plant and animal life, and climate. The nature of the soil at any given place depends on the combination of these five major factors at that particular point. Each of these five factors has had an effect on the formation of every soil in Meriwether County and on every soil throughout the world.

The relative importance of each factor differs from place to place; sometimes one factor has more effect on the formation of the soil, and sometimes another. In extreme cases one factor may dominate in the formation of a soil and determine most of its properties, as is common when the parent material consists of pure quartz sand. Quartz sand is highly resistant to change, and soils formed in it commonly have faint horizons. Even in quartz sand, however, a distinct profile can be formed under certain types of vegetation where the topography is low and flat and there is a high water table. Thus, for every soil, the past combination of the five major factors is of first importance to its present character.

Formation of Soils

The following discussess the five factors that affect soil formation. These are parent material, topography, time, plant and animal life, and climate.

Parent material.—Parent material is the unconsolidated mass from which a soil develops. It is largely responsible for the chemical and mineralogical composition of soils. In Meriwether County the parent material of about 83 percent of the soils is residual: that is, the soils formed in place through the weathering of the parent rocks. The kinds of rocks from which the parent material of the soils in each series was derived are listed in table 17. (See "Morphology and Classification of Soils".)

According to the Geologic Map of Georgia,[9] biotite gneiss and schist underlie about 52 percent of the county. Soils of the Madison, Cecil, and Louisa series are the principal ones formed in material derived from these two kinds of rock. In about 13 percent of the county, granite gneiss underlies the soils. The soils formed in material derived from granite gneiss are mostly of the Cecil, Louisburg, and Appling series. Manchester schist and Sparks schist underlie about 8.5 percent of the county. Habersham soils formed in much of the area underlain by those rocks.

About 4 percent of the county is underlain by quartzite, and Cobbly and gravelly land is generally in those areas. Another 4 percent of the county is underlain by biotite and muscovite granite. The Lloyd and Davidson soils are the principal ones developed in material derived from those rocks. The Cecil, Appling, and Madison soils are the principal soils developed in the area underlain by augen gneiss, and those soils occupy about 1.5 percent of the county. Granite outcrops occupy a few hundred acres.

About 14 percent of the county is occupied by soils formed in alluvium. These soils are mainly along the larger streams. About 2 percent of this acreage consists of soils formed in old alluvium, and about 12 percent, of soils formed in young alluvium. Much of this alluvium originated from rocks in the nearby uplands, but some of it came from the granitic and metamorphic rocks of the uplands as much as 60 miles to the north. The soils on first bottoms show little profile development and are still receiving deposits. In contrast, the soils on the old, high terraces have been in place long enough for distinct horizons to have developed.

About 3 percent of the county is occupied by soils formed in old local alluvium or colluvial material. This material has rolled, slipped, or otherwise been translocated from Pine Mountain. The soils in those areas have been in place long enough to have a strong degree of profile development. The Braddock and Thurmont soils are the principal ones formed in this material.

Topography.—Topography is largely determined by the kind of bedrock formations underlying the soils, by the geologic history of the area, and by the effects of dissection by streams. It influences soil formation through its effect on moisture relations, erosion, temperature, and plant cover.

The soils of Meriwether County have slopes that range from 0 to about 60 percent. In upland areas the soils that have slopes of less than 15 percent are generally deeper and have more distinct horizons than those that have stronger slopes. Where soils have slopes of 15 to 60 percent, geologic erosion removes the soil material almost as fast as it forms. As a result, most of the soils that have strong slopes—for example, the Louisa and Louisburg soils—have a thin solum.

Most of this county is gently rolling, and the elevation is generally between 700 and 930 feet above sea level. However, the top of Pine Mountain, across the southern border and in the southeastern corner, is about 1,200 feet above sea level. The lowest elevation is at the point where the Flint River flows out of the county. It is less than 700 feet above sea level, or about 500 feet below the highest point.

These differences in elevation and the many branching drainageways contribute to the good drainage of most of the county. Excess water moves into the drainage channels rapidly and is removed quickly.

Time.—The length of time required for a mature soil to develop depends largely on the other factors of soil formation. A normal, or mature, soil profile in this county is one that has an easily recognized zone of eluviation (A horizon) and one of illuviation (B horizon). Less time is generally required for a soil to develop in a humid, warm area where the vegetation is rank than in a dry or cold area where the vegetation is scant. Also, less time is required if the parent material is coarse textured than if it is fine textured, other factors being equal.

The age of soils varies considerably. Generally speaking, older soils show a greater degree of horizon differentiation than younger ones. For example, in the smoother parts of the uplands and on the older stream terraces, the soils have developed to maturity. On the stronger slopes, however, geologic erosion has removed the soil material

[9] GEORGIA DIVISION OF MINES, MINING, AND GEOLOGY. GEOLOGIC MAP OF GEORGIA. Prepared by Ga. Div. of Mines, Mining, and Geol. in coop. with the U.S. Dept. of Int., Geol. Survey. 1 p. 1939.

so rapidly that the depth to bedrock, in some places, has been kept shallow. Consequently, the soils have had less chance of developing a mature profile. On the first bottoms and in areas of local alluvium, the soil material has been in place too short a time to allow a mature profile to develop.

Plant and animal life.—The kinds and numbers of plants and animals that live on and in the soil are determined, in large part, by the climate and, to varying degrees, by the parent material, topography, and time (or age of the soil). Bacteria, fungi, and other micro-organisms aid in weathering rock and decomposing organic matter.

The larger plants furnish organic matter. They also transfer elements from the subsoil to the surface soil by assimilating those elements into their tissue and then depositing this tissue on the soil surface as fallen fruit, leaves, or stems. When trees are uprooted, soil material is carried to the surface by the upturned roots. Earthworms and other small invertebrates carry on a slow, but continual, cycle of soil mixing. Soil material may be altered chemically when ingested by earthworms. The fungi and other micro-organisms that live in the soil are most numerous, by far, in the uppermost few inches.

Practically all of the soils of the county contain literally millions of micro-organisms, insects, small plants, and small animals in each cubic foot. These organisms exert a continual effect on the physical and chemical properties of the soils.

Before 1800 the uplands of Meriwether County were covered by forests. The forests consisted mainly of oak and hickory but included a few pines. The soils of the first bottoms were generally covered by yellow-poplar, gum, ash, oak, willow, and beech. Most of these areas were cleared and cultivated at one time, but many of them are now covered by pines.

Man is important to the future direction and rate of development of the soils because he clears the forests, cultivates, the soils, and introduces new kinds of plants. Except for a sharp reduction in the content of organic matter in the soils after a few months under cultivation, however, and loss of the somewhat coarser textured eluviated layer as a result of the more rapid erosion on most sloping areas under cultivation, few results of these changes can be seen as yet. Some results probably will not be evident for many centuries. Nevertheless, the complex of living organisms affecting soil formation in Meriwether County has been drastically changed as a result of man's activity.

Climate.—Climate, as a genetic factor, affects the physical, chemical and biological relationships in the soil profile, primarily through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residues through the soil profile. The amount of water that percolates through the soil at a given point is dependent upon rainfall, relative humidity, length of the frost-free period, soil permeability, and physiographic position. Temperature influences the kinds and growth of organisms and the speed of physical and chemical reactions in the soils.

The climate of Meriwether County is of the humid, warm-temperate, continental type characteristic of the southeastern part of the United States. In this kind of climate, the soils are moist much of the time from November 15 through July 31. They are moderately dry much of the time from August 1 through November 14. The surface layer is frozen only a few days each year and then only to a depth of 1 to 3 inches.

Because the climate is uniform throughout the county, it has not caused local differences among the soils. In fact, it has tended to cause similarities, even among soils developed from different parent material. As expected in this type of climate, most of the soils in the county are highly weathered, leached, strongly acid, and low in fertility.

Morphology and Classification of Soils

The natural soil classification used in the United States [10] consists of six categories. Beginning at the top, they are the order, suborder, great soil group, family, series, and type.

The highest category consists of three orders, but thousands of soil types are recognized in the lowest category. The suborder and family categories have never been fully developed and, thus, have been little used. Attention has been largely directed toward great soil groups, series, and types. Groups in the highest category of the classification scheme are the zonal, intrazonal, and azonal orders.

In the zonal order are soils with evident, genetically related horizons that reflect the predominant influence of climate and plant and animal life in their formation. In Meriwether County the great soil groups in the zonal order are the Red-Yellow Podzolic, which makes up about 75 percent of the county, and the Reddish-Brown Lateritic soils.

In the intrazonal order are soils with evident, genetically related horizons that reflect the dominant influence of a local factor of topography or parent material over the effects of climate and plant and animal life. In this county the great soil groups in the intrazonal order are the Planosols and Low-Humic Gley soils.

The azonal order consists of soils that lack distinct, genetically related horizons, because they are youthful, or because the parent material resists soil-forming processes. The great soil groups in the azonal order in this county are Alluvial soils and Lithosols.

Table 17 lists the soil series by great soil groups and orders and give some of the distinguishing characteristics of each series. A detailed profile description for each soil series is provided in the following pages. The descriptions are presented by great soil groups, in essentially the same sequence as they are listed in table 17.

Red-Yellow Podzolic soils

The Red-Yellow Podzolic great soil group consists of well-developed, chiefly well-drained, acid soils that have a thin, organic A0 horizon and an organic-mineral A1 horizon. The A1 horizon is underlain by a light-colored, leached A2 horizon that overlies a red, yellowish-red, or yellow and more clayey B2 horizon. The parent material is all more or less siliceous. Coarse, reticulate streaks or mottles of red, brown, and light gray are characteristic of the deep horizons where the parent material is thick.[11]

[10] U.S. DEPARTMENT OF AGRICULTURE. SOIL AND MEN. U.S. Dept. Agr. Ybk., pp. 979–1001. 1938.

[11] THORP, JAMES, and SMITH, GUY D. HIGHER CATEGORIES OF SOIL CLASSIFICATION: ORDER, SUBORDER, AND GREAT SOIL GROUPS. Soil Sci. 67: 117–126. 1949.

TABLE 17.—*Classification of the soil series by higher categories*

ZONAL

Great soil group and soil series	Brief profile description [1]	Position	Drainage class	Slope range	Parent material	Degree of profile development [2]
Red-Yellow Podzolic soils:						
Representative—				*Percent*		
Altavista	Dark grayish-brown fine sandy loam over friable, yellowish-brown sandy clay loam that is mottled below a depth of about 17 inches; variable alluvium is at a depth of about 40 inches.	Low stream terraces.	Moderately well drained.	2 to 6	Old alluvium	Strong.
Appling	Light yellowish-brown loamy sand over 2 feet or more of friable, mottled, strong-brown to yellowish-red sandy clay to clay.	Upland slopes and ridges.	Well drained	2 to 15	Material weathered from granite, gneiss, and schist.	Strong.
Braddock	Dark yellowish-brown sandy loam over 2 feet or more of friable, red to yellowish-red clay.	Foot slopes of Pine Mountain.	Well drained	2 to 25	Old local alluvium from sandstone.	Strong.
Cecil	Yellowish-brown sandy loam over 2 feet or more of firm, red clay to clay loam.	Upland slopes and ridges.	Well drained	2 to 25	Material weathered from gneiss, granite, and schist.	Strong.
Habersham	Yellowish-brown gravelly loamy sand over about 2 feet of friable, red clay loam.	Ridges of Pine Mountain.	Well drained	2 to 15	Material weathered from sandstone, quartzite, and schist.	Strong.
Madison	Brown sandy loam over 2 to 3 feet of friable, micaceous, red clay loam.	Upland slopes and ridges.	Well drained	2 to 25	Material weathered from mica schist.	Strong.
Thurmont	Pale-brown loamy sand over 15 to 25 inches of friable, strong-brown to yellowish-brown sandy clay loam to clay loam that is mottled in the lower part.	Foot slopes of Pine Mountain.	Well drained	2 to 15	Old local alluvium from sandstone and quartzite.	Strong.
Vance	Dark grayish-brown loamy coarse sand over 12 to 20 inches of very firm, reddish-yellow to yellowish-red clay.	Upland slopes and ridges.	Moderately well drained.	2 to 15	Material weathered from granite, gneiss, and schist.	Strong.
Wickham	Yellowish-brown fine sandy loam over 2 to 4 feet of firm, red clay loam.	High stream terraces.	Well drained	2 to 10	Old alluvium	Strong.
With some characteristics of Reddish-Brown Lateritic soils—						
Lloyd	Dark reddish-brown to dark-brown sandy loam over 3 to 5 feet of red to dark-red clay to clay loam.	Upland slopes and ridges.	Well drained	2 to 25	Material weathered from diorite, hornblende, gneiss, and schist.	Strong.
With some characteristics of Low-Humic Gley soils—						
Augusta	Dark grayish-brown sandy loam over gray silty clay loam; beneath this is variable alluvium.	Low stream terraces.	Somewhat poorly drained.	0 to 2	Old alluvium	Medium.
Colfax	Dark grayish-brown to brown sandy loam or loamy coarse sand over friable, mottled, grayish-brown to light olive-brown sandy clay loam.	Around heads of drains, in low saddles, and on lower slopes.	Somewhat poorly drained.	2 to 10	Material weathered from granite and gneiss.	Medium.

See footnotes at end of table.

TABLE 17.—*Classification of the soil series by higher categories*—Continued

Great soil group and soil series	Brief profile description [1]	Position	Drainage class	Slope range	Parent material	Degree of profile development [2]
ZONAL						
Reddish-Brown Lateritic soils:						
Representative—						
Davidson	Dark reddish-brown loam over 3 to 6 feet of firm, dark-red clay.	Upland slopes and ridges.	Well drained	Percent 2 to 25	Material weathered from diorite, hornblende, and granodiorite.	Strong.
With some characteristics of Lithosols—						
Musella	Dark reddish-brown clay loam over about 1 foot of dark-red clay loam.	Upland slopes	Well drained	2 to 40	Material weathered from diorite, hornblende, schist, and gneiss.	Medium.
INTRAZONAL						
Planosols:						
Iredell	Dark yellowish-brown sandy loam over extremely firm, olive-yellow clay.	Upland slopes	Moderately well drained.	2 to 6	Material weathered from diorite and hornblende gneiss.	Strong.
Roanoke	Grayish-brown silt loam over extremely firm, light brownish-gray to light-gray clay that is 10 to 30 inches thick; beneath this is variable alluvium.	Low stream terraces.	Poorly drained.	0 to 2	Old alluvium	Strong.
Low-Humic Gley soils:						
Wehadkee	Olive-gray silty clay loam over 10 to 24 inches of massive, gray silty clay loam; beneath this is variable alluvium.	Flood plains	Poorly drained.	0 to 2	Recent alluvium.	Weak.
Worsham	Light grayish-brown coarse sandy loam over 15 to 30 inches of extremely firm, gray clay.	Small upland depressions and around the heads of drainageways.	Poorly drained.	2 to 6	Material weathered from gneiss and granite.	Medium.
AZONAL						
Alluvial:						
Representative—						
Buncombe	Very friable, pale-brown to pale-yellow loamy sand to a depth of 36 inches or more.	Flood plains	Somewhat excessively drained.	0 to 4	Recent alluvium.	Weak.
With some characteristics of Low-Humic Gley soils—						
Chewacla	Dark-brown silt loam over very friable, brownish sandy loam to sandy clay loam mottled at a depth of about 14 inches.	Flood plains	Somewhat poorly drained.	0 to 2	Recent alluvium.	Weak.
Lithosols:						
Louisa	Brown coarse sandy loam over highly weathered, reddish mica schist that can be broken down easily into sandy clay loam to loamy coarse sand.	Upland slopes	Somewhat excessively drained.	6 to 25	Material weathered from mica schist.	Weak.
Louisburg	Grayish-brown loamy coarse sand over weathered or hard granite.	Upland slopes and ridges.	Somewhat excessively drained.	2 to 25	Material weathered from granite and gneiss.	Weak.
Wilkes	Dark yellowish-brown stony loamy sand over a thin layer of dark yellowish-brown clay; underlain by partly weathered rock.	Upland slopes	Well drained	15 to 40	Material weathered from granite, hornblende schist, and diorite.	Weak.

[1] These descriptions are of soil profiles not materially affected by accelerated erosion.

[2] As measured by the number of important genetic horizons and the degree of contrast between them.

Kaolinite is the dominant clay mineral. The cation-exchange capacity is low, and the percentage of base saturation is very low. The subsoil has moderate, subangular blocky structure and colors of high chroma. In general, soils of this great soil group in Meriwether County have a cation-exchange capacity of less than 20 milliequivalents per 100 grams of soil and a percentage of base saturation ranging from 5 to 30. Except for the Altavista and Thurmont soils, all the Red-Yellow Podzolic soils have high chromas in the B2 layer.

All of the soils in this county that fit the central concept of the Red-Yellow Podzolic group originally had a dark-colored, but thin, A1 horizon and a well-defined A2 horizon. Plowing and erosion have disturbed these horizons so that the present surface layer is mixed material from the original A1 and A2 horizons, are predominantly mixed material from the A2 and B horizons, or predominantly material from the B horizon. In most areas that are not severely eroded, the surface layer is strongly acid, granular to loose loamy sand to sandy loam. The B horizon has moderate, medium, subangular blocky structure.

The B horizon generally contains from two to six times as much clay as the A horizon and nearly twice as much clay as the C horizon. This last characteristic is not common in certain Red-Yellow Podzolic soils in some other parts of the country. Clay films are common to prominent in the B2 horizon. The structure of the C horizon is weaker than that of the B horizon, and the color is more variable. As a rule, the C horizon is also more strongly acid.

The Madison, Vance, Braddock, Habersham, Wickham, and Cecil soils are examples of Red-Yellow Podzolic soils that have a reddish hue (2.5YR) and high chroma (6 or more) in the subsoil. These soils have moderate, medium, subangular blocky structure. The Madison soils are more micaceous than other soils in this group. The Vance soils have a firmer, more dense and compact subsoil than the other soils. The Braddock soils developed in old colluvium from Pine Mountain. The Habersham soils developed in residuum from sandstone and quartzite. The Wickham soils developed in old alluvium, and the Cecil soils developed in residuum from granite, gneiss, and schist.

The Appling, Altavista, and Thurmont soils are distinguished from the soils that have a reddish subsoil by their less reddish profile. Their B horizon is commonly strong brown to yellowish brown. In the Appling profile, yellowish red rather than red predominates below a depth of about 32 inches. The entire B horizon of the Altavista soils is yellowish brown, and there are some light-brown mottles in the lower part. The B horizon of the Thurmont soils is yellowish brown. The soils in each of these three soil series have a mottled color pattern below the B horizon. The Appling soils, however, have few or no gray mottles within their solum; their mottlings are contrasts among reds, yellows, and browns. The Altavista soils have a few light-brown or pale-olive mottles at a depth of about 20 inches, and mottles are abundant at a depth below 36 inches. In this respect the soils of the Altavista series represent a gradation toward soils of the Low-Humic Gley group.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Altavista fine sandy loam, 2 to 6 percent slopes:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many roots; very strongly acid; gradual, smooth boundary; 5 to 10 inches thick.

B21—8 to 17 inches, yellowish-brown (10YR 5/4) or light yellowish-brown (10YR 6/4) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, smooth boundary; 8 to 15 inches thick.

B22—17 to 31 inches, yellowish-brown (10YR 5/6) sandy clay loam with a few, fine, prominent mottles of yellowish red; moderate, medium, subangular blocky structure; few, thin, patchy clay films; friable; very strongly acid; diffuse, wavy boundary; 10 to 19 inches thick.

B3—31 to 40 inches, yellowish-brown (10YR 5/8) sandy clay loam with many, medium and coarse, prominent mottles of yellowish red and light yellowish brown; weak and moderate, medium, subangular blocky structure; diffuse, wavy boundary; 5 to 12 inches thick.

C or D—40 to 46 inches +, light-gray (2.5Y 7/2) clay with many, coarse, prominent mottles of brownish yellow; massive; firm.

Appling loamy sand, 2 to 6 percent slopes:

Ap—0 to 7 inches, light yellowish-brown (2.5Y 6/4) loamy sand; structureless; very friable; many roots; few pebbles; clear, smooth boundary; strongly acid; 5 to 8 inches thick.

A2—7 to 11 inches, light yellowish-brown (2.5Y 6/4) loamy sand; weak, fine, granular structure; very friable; many roots; gradual, smooth boundary; strongly acid; 3 to 10 inches thick.

B1—11 to 17 inches, yellowish-brown (10YR 5/6) light sandy clay loam; weak, fine and medium, subangular blocky structure; very friable; many roots; gradual, wavy boundary; strongly acid; 3 to 8 inches thick.

B2—17 to 32 inches, strong-brown (7.5YR 5/8) sandy clay to clay with common, coarse, prominent, red (2.5YR 4/8) mottles; moderate to strong, medium, subangular blocky structure; thin, patchy clay films on the surfaces of peds; friable to firm; strongly acid; gradual, wavy boundary; 12 to 24 inches thick.

B3—32 to 50 inches, yellowish-red (5YR 5/8) sandy clay to sandy clay loam with many, coarse, prominent mottles of red and yellowish brown; moderate, medium, subangular blocky structure; thin, patchy clay films on the surfaces of the peds; friable to firm; strongly acid; gradual, wavy boundary; 8 to 20 inches thick.

C—50 to 64 inches +, variegated red, brown, yellow, and gray, highly weathered gneiss, granite, and schist that break down to sandy loam to sandy clay loam; massive.

Braddock sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 7 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable; 15 to 20 percent pebbles; many fine roots; strongly acid; abrupt, smooth boundary; 5 to 9 inches thick.

A3—7 to 10 inches, reddish-yellow (7.5YR 6/8) sandy loam; weak, medium, granular structure; very friable; 12 to 18 percent pebbles; many fine roots; strongly acid; gradual, wavy boundary; 2 to 4 inches thick.

B1—10 to 17 inches, yellowish-red (5YR 5/6) to red (2.5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable to very friable; 10 to 15 percent pebbles; many fine roots; strongly acid; gradual, wavy boundary; 4 to 9 inches thick.

B2—17 to 39 inches, red (2.5YR 4/8) to yellowish-red (5YR 5/8) clay; moderate, medium, subangular blocky structure; friable to firm; about 5 percent pebbles; many fine roots; strongly acid; diffuse, wavy boundary; 14 to 26 inches thick.

B3—39 to 46 inches, red (2.5YR 4/8) to yellowish-red (5YR 5/8) clay loam or sandy clay loam; weak, medium, subangular blocky structure; friable; few roots; strongly acid; diffuse, wavy boundary; 6 to 15 inches thick.

C—46 to 60 inches +, highly weathered, red, yellow, gray, and brown gneiss and schist.

Cecil sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary; 4 to 8 inches thick.

B1—6 to 11 inches, yellowish-red (5YR 5/6) sandy loam to sandy clay loam; weak, fine, granular structure; very friable; texture becomes finer with increasing depth; very strongly acid; gradual, wavy boundary; 3 to 7 inches thick.

B2—11 to 28 inches, red (2.5YR 5/8) clay; moderate, medium, subangular blocky structure; firm, sticky; very strongly acid; gradual, wavy boundary; 16 to 28 inches thick.

B3—28 to 37 inches, red (2.5YR 5/8) clay or clay loam; moderate, medium, subangular blocky structure; friable, slightly sticky; light brownish-gray mottles where there is material from weathered rock; very strongly acid; diffuse, wavy boundary; 8 to 15 inches thick.

C—37 to 48 inches +, red (2.5YR 4/8) clay loam from very highly weathered gneiss, granite, and some mica schist; moderate, medium, subangular blocky structure; friable; very strongly acid.

Habersham gravelly loamy sand, 2 to 6 percent slopes:

Ap—0 to 6 inches, yellowish-brown (10YR 5/4) gravelly loamy sand; weak, fine and medium, granular structure; very friable; many fine roots; about 25 percent pebbles; strongly acid; clear, smooth boundary; 5 to 8 inches thick.

A3—6 to 11 inches, reddish-yellow (7.5YR 6/6) gravelly sandy loam; weak, medium, subangular blocky structure; very friable; many fine roots; 18 to 22 percent pebbles; strongly acid; clear, wavy boundary; 4 to 9 inches thick.

B2—11 to 27 inches, red (2.5YR 5/8) clay loam; moderate, fine and medium, subangular blocky structure; friable; many fine roots; few fine mica flakes; occasional sandstone fragments; strongly acid; diffuse, wavy boundary; 12 to 20 inches thick.

B3—27 to 34 inches, red (2.5YR 5/8) clay loam; moderate, fine and medium, subangular blocky structure; friable; common, fine mica flakes; strongly acid; abrupt, irregular boundary; 5 to 14 inches thick.

C—34 to 40 inches +, highly weathered, red sandstone; massive; easily broken down to sandy loam; fine mica flakes are common.

Madison sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, brown (7.5YR 5/4) sandy loam; weak, fine, granular structure; very friable; about 12 to 15 percent fine pebbles of mica schist; few cobbles; much mica; many roots; very strongly acid; clear, smooth boundary; 4 to 8 inches thick.

B1—6 to 9 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; contains many roots, and enough mica to make it slick and shiny; very strongly acid; gradual, smooth boundary; 3 to 6 inches thick.

B2—9 to 28 inches, red (2.5YR 4/6) clay loam; moderate, medium, subangular blocky structure; friable; contains many roots, and enough mica to make it slick and shiny; very strongly acid; gradual, wavy boundary; 14 to 22 inches thick.

B3—28 to 38 inches, red (2.5 YR 4/6) clay loam; moderate medium, subangular blocky structure; friable; highly micaceous; very strongly acid; diffuse, wavy boundary; 7 to 17 inches thick.

C—38 to 48 inches, highly weathered mica schist that breaks down to loamy sand to sandy clay loam; commonly red, but ranges to grayish brown.

Thurmont loamy sand, 2 to 6 percent slopes:

Ap—0 to 6 inches, pale-brown (10YR 6/3, moist) or light-gray (10YR 7/2, dry) loamy sand; weak, fine, granular structure; very friable; 15 to 18 percent of surface is covered by slightly rounded pebbles; strongly acid; gradual, wavy boundary; 4 to 9 inches thick.

B1—6 to 19 inches, strong-brown (7.5YR 5/8) sandy clay loam; moderate, fine, subangular blocky structure; friable; contains a few slightly rounded pebbles; very strongly acid; gradual, wavy boundary; 7 to 15 inches thick.

B2—19 to 29 inches, yellowish-brown (10YR 5/8) clay loam with many, coarse, distinct mottles of yellowish red (5YR 4/8); moderate, medium, angular and subangular blocky structure; friable; contains a few slightly rounded pebbles; very strongly acid; gradual, wavy boundary; 8 to 18 inches thick.

D—29 to 33 inches +, layer of slightly rounded pebbles mixed with yellowish-brown (10YR 5/8) clay; many, course, prominent mottles of yellowish red (5YR 4/8) and light gray (10YR 7/2) in the spaces between the pebbles.

Vance loamy coarse sand, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, dark grayish-brown (2.5Y 4/2) loamy coarse sand; weak, fine, granular structure; very friable; 5 to 8 percent of the surface is covered by quartz pebbles; very strongly acid; clear, smooth boundary; 4 to 7 inches thick.

B2—6 to 18 inches, reddish-yellow (5YR 6/6) clay mottled with red (2.5YR 5/6) and yellowish brown (10YR 5/6); strong, medium, subangular blocky structure; very firm, very hard, sticky and plastic; very strongly acid; gradual, wavy boundary; 10 to 17 inches thick.

B3—18 to 26 inches, yellowish-red (5YR 5/8) clay mottled with red (2.5YR 5/6) and yellowish brown (10YR 5/6); strong, moderate, angular and subangular blocky structure; firm, very hard, sticky; 10 to 15 percent slightly weathered rock; very strongly acid; diffuse, wavy boundary; 5 to 12 inches thick.

C—26 to 60 inches +, reddish-yellow (5YR 6/6) coarse sandy clay loam with many, medium, distinct mottles where there is gray rock; massive; contains feldspar; very strongly acid.

Wickham fine sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; few water-rounded pebbles on the surface; strongly acid; clear, smooth boundary; 5 to 8 inches thick.

B1—6 to 9 inches, yellowish-red (5YR 5/6) sandy clay loam; weak to moderate, medium, subangular blocky structure; friable; strongly acid; clear, smooth boundary; 3 to 6 inches thick.

B2—9 to 43 inches, red (2.5YR 4/8) clay loam; moderate, medium, subangular blocky structure; firm, very hard, sticky; contains a few water-rounded pebbles and many mica flakes; very strongly acid; gradual, wavy boundary; 18 to 36 inches thick.

D—43 to 48 inches +, layer of water-rounded pebbles weakly cemented with red clay or sandy clay loam.

Red-Yellow Podzolic soils that have some characteristics of Reddish-Brown Lateritic soils.—Although the Lloyd soils are classified as Red-Yellow Podzolic soils, they have some characteristics of Reddish-Brown Lateritic soils. These characteristics are the low contrast between the A1 and A2 horizons, and the subsoil of red to dark-red clay that has subangular blocky structure.

The parent material of the Lloyd soils contains less mica and more diorite and hornblende than the parent material of other Red-Yellow Podzolic soils of the county.

DESCRIPTIONS OF A REPRESENTATIVE SOIL PROFILE

Lloyd sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 5 inches, dark reddish-brown (5YR 3/4) to dark-brown (7.5YR 3/2) sandy loam; weak, fine, granular structure; very friable; many roots; strongly acid; clear, smooth boundary; 4 to 8 inches thick.

B1—5 to 10 inches, dark-red (2.5YR 3/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; many roots; very strongly acid; clear, smooth boundary; 3 to 8 inches thick.

B2—10 to 29 inches, red (2.5YR 4/6) clay; moderate, medium, subangular blocky structure; friable, sticky; mica in lower part; very strongly acid; gradual, wavy boundary; 15 to 30 inches thick.

B3—29 to 44 inches, red (2.5YR 4/6) clay loam with common, medium, distinct mottles of reddish yellow (7.5YR 6/6); moderate, medium, subangular blocky structure; friable, slightly sticky; much mica; very strongly acid; diffuse, wavy boundary; 10 to 20 inches thick.

C—44 to 50 inches +, red (2.5YR 4/8) silty clay loam to loam; weak, medium, subangular blocky structure; friable; much mica; very strongly acid.

Red-Yellow Podzolic soils that have some characteristics of Low-Humic Gley soils.—Although the Augusta and Colfax soils are classified as Red-Yellow Podzolic soils, they have some characteristics of Low-Humic Gley soils. The Augusta and Colfax soils are somewhat poorly drained or moderately well drained. They have strong color contrast (especially in value) between the A1 and A2 horizons. Their B horizon is predominantly mottled gray, grayish brown, light olive brown, yellowish brown, and yellowish red.

DESCRIPTIONS OF A REPRESENTATIVE SOIL PROFILE

Augusta sandy loam:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2, moist) or light olive-brown (2.5Y 5/4, dry) sandy loam; weak, fine, granular structure; soft, very friable; contains many fine roots; numerous mica flakes; many pore spaces; very strongly acid; clear, smooth boundary; 5 to 10 inches thick.

B1—7 to 13 inches, grayish-brown (2.5Y 5/2) sandy clay loam with common, fine, faint to distinct mottles of yellowish red (5YR 4/6) and gray (10YR 5/1); weak, fine, granular structure; soft, very friable, nonsticky; many fine roots, numerous mica flakes; many pore spaces; a few pebbles; very strongly acid; clear, smooth boundary; 5 to 12 inches thick.

B2g—13 to 30 inches, gray or dark-gray (5Y 5/1, 4/1) silty clay loam with common, fine, prominent mottles of yellowish red (5YR 4/6) or brownish yellow (10YR 6/8); moderate, medium, subangular blocky structure; hard, friable, slightly sticky; many roots; numerous mica flakes; many pore spaces; very strongly acid; clear, wavy boundary; 8 to 20 inches thick.

C1g—30 to 39 inches, light-gray (5Y 6/1) sandy clay loam with common, fine, prominent mottles of yellowish red (5YR 4/6) and reddish yellow (7.5YR 6/8); massive; friable, slightly sticky; contains much mica; very strongly acid; gradual, wavy boundary; mottles appear to follow old pore spaces; 6 to 20 inches thick.

C2g—39 to 50 inches +, greenish-gray (5GY 6/1) sandy loam to sandy clay loam with common, fine, distinct mottles of grayish brown; massive; very friable, nonsticky; very strongly acid.

Colfax sandy loam, overwash, 2 to 6 percent slopes:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, medium, granular structure; very friable; many roots and partly decayed plant residues; very strongly acid; clear, smooth boundary; 5 to 8 inches thick.

A3—7 to 15 inches, brown (10YR 5/3) sandy loam; weak, medium, granular structure; very friable; many roots; very strongly acid; clear, smooth boundary; 4 to 12 inches thick.

B1—15 to 20 inches, grayish-brown (2.5Y 5/2) light sandy clay loam with common, fine, distinct mottles of yellowish brown (10YR 5/4); weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary; 5 to 8 inches thick.

B2—20 to 32 inches, light olive-brown (2.5Y 5/4) sandy clay loam with many, medium to coarse, distinct mottles of brownish yellow (10YR 6/8) and gray; weak, medium, subangular blocky structure; friable, sticky, plastic when wet; very strongly acid; gradual, wavy boundary; 10 to 20 inches thick.

B3—32 to 38 inches, gray, yellowish-brown, and white sandy clay loam that is coarsely mottled; moderate, medium, subangular blocky structure; much coarse sand, some partly weathered rock fragments; friable or sticky; very strongly acid; diffuse, wavy boundary; 5 to 12 inches thick.

C—38 to 42 inches +, mottled gray, white, and yellowish-brown coarse sandy loam to sandy clay loam; massive; friable to slightly cemented; highly weathered granite and gneiss.

Reddish-Brown Lateritic soils

Reddish-Brown Lateritic soils have a mineral surface layer of dark reddish brown that overlies a dark-red, clayey, illuvial B horizon. These soils lack a light-colored, eluvial A2 horizon, and their B horizon is redder than is characteristic of the Red-Yellow Podzolic soils. They developed in a moist, warm-temperate climate. Evidence indicates that the vegetation under which they developed was deciduous hardwoods.

These soils are strongly acid and are low in content of organic matter. The base-exchange capacity of their subsoil is less than 20 milliequivalents per 100 grams of soil, and base saturation is less than 30 percent. The soils of the Davidson and Musella series are the only soils in the county in this group. They formed in material weathered from basic igneous and metamorphic rocks.

The Davidson series represents the central concept of this great soil group. These soils are distinguished from the Madison soils and from other Red-Yellow Podzolic soils chiefly by their darker (dark reddish-brown) A horizon and their lower content of coarse fragments of rock, sand, and mica throughout the profile. Kaolinite and vermiculite are the dominant clay minerals.

The Musella soils are Reddish-Brown Lateritic soils that have some characteristics of Lithosols. The color throughout the solum resembles that of the soils in the Davidson series. The Musella soils generally have stronger slopes than the Davidson soils, and they have been more subject to geologic erosion. The B horizon is thinner and discontinuous, and there is more sand throughout the profile. There are coarse fragments of hard or partly weathered rock throughout the profile, and depth to bedrock is less than in the Davidson soils.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Davidson loam, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, dark reddish-brown (5YR 3/3) loam; moderate, medium, granular structure; very friable, slightly sticky, slightly hard; many fine roots; strongly acid; clear, smooth boundary; 4 to 9 inches thick.

B2—6 to 44 inches, dark-red (2.5YR 3/6) clay; weak to moderate, fine and medium, subangular blocky structure; firm, hard, sticky; many fine roots; thin, patchy clay films on the surfaces of peds, becoming thicker with increasing depth; strongly acid; diffuse, wavy boundary; 22 to 60 inches thick.

B3—44 to 60 inches, dark-red (2.5YR 3/6) silty clay; moderate, medium, subangular blocky structure; friable to firm; patchy clay films on the surfaces of peds; strongly acid; diffuse, wavy boundary; 10 to 24 inches thick.

C—60 to 72 inches +, dark-red to yellowish-brown silty clay loam to sandy clay loam from highly weathered basic rocks.

Musella clay loam, 2 to 10 percent slopes, severely eroded:

Ap—0 to 5 inches, dark reddish-brown (5YR 3/4) clay loam; moderate, fine, subangular blocky structure; friable; a few fine mica flakes; a few hard fragments of hornblende gneiss; a few partly weathered fragments of diorite; very strongly acid; clear, wavy boundary; 3 to 6 inches thick.

B—5 to 16 inches, dark-red (2.5YR 3/6) clay loam; moderate, fine and medium, subangular blocky structure; friable; 10 to 15 percent hornblende and fragments of weathered diorite; lower part has thin, patchy clay films on the surfaces of peds; very strongly acid; diffuse, irregular boundary; 6 to 13 inches thick.

C—16 to 28 inches +, yellowish-red (5YR 4/6) clay loam with many coarse, distinct mottles of very dark gray and strong brown where there is partly weathered diorite.

Planosols

The soils of this intrazonal soil group have one or more horizons abruptly separated from and in sharp contrast to an adjacent horizon because of high content of clay, cementation, or compactness. They formed under forest or grass in a moderate to hot, semiarid to rather humid climate. In most places they have a fluctuating water table.

The Iredell and Roanoke soils of the Planosol great soil group have a B horizon that is much higher in clay than the A horizon. The B horizon of the Iredell and Roanoke soils is extremely firm clay that has angular blocky to prismatic structure. The A horizon is sandy loam in the Iredell soils and silt loam in the Roanoke soils.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Iredell sandy loam, 2 to 6 percent slopes, eroded:

Ap—0 to 6 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable; many roots; few fine pebbles; medium acid; abrupt, smooth boundary; 4 to 8 inches thick.

A3—6 to 9 inches, light olive-brown (2.5Y 5/6) heavy sandy loam; weak, fine, subangular blocky structure; very friable; many roots; strongly acid; abrupt, smooth boundary; 0 to 5 inches thick.

B—9 to 20 inches, olive-yellow (2.5Y 6/6) clay with many, fine, distinct, light-brown and black mottles; strong, coarse, angular blocky and prismatic structure; extremely firm, very hard, plastic; thick, prominent clay films on the surfaces of peds; very strongly acid; diffuse, wavy boundary; 7 to 15 inches thick.

C—20 to 36 inches +, highly mottled gray, olive, and brown sandy clay loam to clay; massive; very firm, very sticky; very strongly acid.

Roanoke silt loam:

A00—1 to ½ inch, partly decayed leaves.

A0—½ inch to 0, very dark gray or black, well-rotted leaves.

A1—0 to 5 inches, grayish-brown (2.5Y 5/2) silt loam with common, fine, faint mottles of olive (2.5Y 5/4) and light gray (2.5Y 7/2); weak, fine, granular structure; friable; contains many roots and much organic matter; very strongly acid; clear, smooth boundary; 4 to 7 inches thick.

A2—5 to 10 inches, light-gray (2.5Y 7/2) light sandy loam with a few, fine, distinct mottles of yellowish brown (10YR 5/8); weak, fine, granular structure; very friable; very strongly acid; abrupt, irregular boundary; 3 to 8 inches thick.

B2g—10 to 22 inches, light brownish-gray (2.5Y 6/2) clay with many, medium, prominent mottles of strong brown (7.5YR 5/6); strong, medium and coarse, angular and subangular blocky structure; extremely firm, extremely hard, very sticky; common root channels; prominent clay films on the surfaces of peds and in the root channels; very strongly acid; gradual, wavy boundary; 8 to 18 inches thick.

B3g—22 to 30 inches, light-gray (N 7/0) sandy clay with many, medium, prominent mottles of white (N 8/0) and strong brown (7.5YR 5/6); moderate, medium, subangular blocky structure; very firm, very hard, very sticky; few fine roots; very strongly acid; diffuse, wavy boundary; 6 to 12 inches thick.

Cg—30 to 41 inches +, light-gray (N 7/0) sandy clay loam with common, medium, distinct mottles of white (N 8/0) and light yellowish brown (10YR 6/4); moderate, medium, subangular blocky structure; firm, very hard, sticky; very strongly acid.

Low-Humic Gley soils

The Low-Humic Gley great soil group consists of imperfectly drained to poorly drained soils in the intrazonal order. These soils have a thin surface layer that is moderately high in content of organic matter. The surface layer overlies mottled gray and brown, gleylike mineral layers that have a low degree of textural differentiation.

In this county the only soils in this group are those of the Wehadkee and Worsham series. The Wehadkee soils are in lower positions on the bottom lands than other soils in the county. The water table is at or near the surface during wet periods, but, during the driest periods, it is well below the surface. In virgin areas the Wehadkee soils have a dark, thin A1 horizon and weak structure. The Wehadkee soils are strongly acid, and the percentage of base saturation is low. The Worsham soils formed in residuum from granite and gneiss. They have much coarse sand throughout the profile, and they have a gleyed B horizon.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Wehadkee silty clay loam:

Ap—0 to 7 inches, olive-gray (5Y 4/2) silty clay loam with common, fine, faint mottles of dark gray (N 4/0) and light gray (10YR 7/1); massive; friable, slightly sticky; 6 to 8 percent partly decayed plant residue; very strongly acid; gradual, smooth boundary; 5 to 10 inches thick.

C1—7 to 25 inches, light-gray (5Y 6/1) silty clay loam to silt loam with common, medium, distinct mottles of brownish yellow (10YR 6/6); massive; slightly sticky; few roots and plant residue; very strongly acid; diffuse, wavy boundary; 15 to 30 inches thick.

C2—25 to 37 inches +, light-gray (5Y 7/1) fine sandy loam to silty clay loam in layers; massive; very strongly acid.

Worsham coarse sandy loam, 2 to 6 percent slopes:

Ap—0 to 7 inches, light grayish-brown (10YR 6/2) to gray (10YR 6/1) coarse sandy loam; weak, fine, granular structure; very friable; many roots; strongly acid; clear, wavy boundary; 4 to 8 inches thick.

B1—7 to 12 inches, light-gray (10YR 7/2) sandy clay loam with common, medium, distinct mottles of brownish yellow (10YR 6/6); weak, medium, subangular blocky structure; friable, hard, sticky; very strongly acid; gradual, wavy boundary; 3 to 6 inches thick.

B2—12 to 28 inches, gray (5Y 6/1) to light-gray (5Y 7/1) clay with common, medium and coarse, prominent mottles of strong brown (7.5YR 5/6); moderate, medium, subangular blocky structure; extremely firm, sticky; very strongly acid; diffuse, wavy boundary; 12 to 22 inches thick.

C—28 to 36 inches +, white (N 8/0) sandy clay loam; contains many quartz pebbles.

Alluvial soils

Alluvial soils are in the azonal group of soils developed from transported and relatively recently deposited material, or alluvium. They are characterized by a weak modification, or none, of the original material by soil-forming processes. In this county the Buncombe series represents the central concept for this great soil group. The soils of this series formed in young material and show little pro-

file development. They are subject to flooding, but, during periods of normal streamflow, they are somewhat excessively drained. These soils are very slightly darker in the upper part of the profile than in the lower part, which indicates that there is a slight accumulation of organic matter in the upper part. The Buncombe soils are strongly acid and are low in base saturation. They are very low in clay content.

The Chewacla soils are in the Alluvial great soil group, but they have some characteristics of Low-Humic Gley soils. They are somewhat poorly drained. The soil material in the uppermost 12 to 18 inches is free of gleying, but below that depth there are indications of at least moderate gleying. Generally, the uppermost layer has a darker color than that of the Buncombe soils. There is practically no evidence of a B horizon in the Chewacla soils. The entire profile is very strongly acid, and the percentage of base saturation is low.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Buncombe loamy sand:

Ap—0 to 8 inches, pale-brown (10YR 6/3) loamy sand; weak, fine, granular structure; very friable to loose; many roots; strongly acid; gradual, wavy boundary; 6 to 10 inches thick.

C—8 to 48 inches +, pale-yellow (2.5Y 7/4) loamy sand with common, coarse, faint mottles or splotches of white (5Y 8/2); weak, fine, granular structure; very friable to loose; strongly acid; 24 to 60 inches thick.

Chewacla silt loam:

Ap—0 to 5 inches, dark-brown (7.5YR 4/4) silt loam; moderate, medium to coarse, granular structure; friable; many fine roots; very strongly acid; clear, wavy boundary; 4 to 8 inches thick.

C1—5 to 14 inches, brown (7.5YR 4/4) light sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; gradual, wavy boundary; 5 to 15 inches thick.

C2—14 to 20 inches, brown (7.5YR 4/4) light sandy loam with many, coarse, distinct mottles of very pale brown (10YR 7/3); weak, fine, granular structure; very friable; a few roots; very strongly acid; gradual, wavy boundary; 5 to 15 inches thick.

C3—20 to 30 inches, pale-olive (5Y 6/3) sandy clay loam with many, medium, prominent mottles of brownish yellow (10YR 6/6); weak, medium, subangular blocky structure; friable or slightly sticky; few roots; very strongly acid; gradual, wavy boundary; 0 to 15 inches thick.

D—30 to 52 inches, olive-gray (5Y 5/2) clay with many, medium, prominent mottles of strong brown, brown, or dark brown; moderate, medium, subangular blocky structure; friable; plastic when wet; very strongly acid.

Lithosols

Lithosols are an azonal group of soils that have an incomplete solum, or the soil morphology is not clearly expressed. They are generally steep and consist of a freshly and imperfectly weathered mass of hard rock or fragments of hard rock. In these soils geologic erosion has nearly kept pace with the soil-forming processes. The soils have few horizons, and those horizons are barely discernible.

In Meriwether County the Louisburg, Louisa, and Wilkes soils are in this great soil group. Where undisturbed, these soils have a thin, faint A1 horizon. The Louisburg and Louisa soils commonly have a moderately thick A2 horizon, and the Wilkes soils commonly have a thin A2 horizon. Under the A2 horizon in the Louisburg soils there is commonly a C horizon of weathered granitic schist, and under the A2 horizon of the Louisa soils, a C horizon of mica schist. In a few places there is a BC horizon of sandy clay loam that is 4 to 10 inches thick. Under the A2 horizon in the Wilkes soils there is commonly a BC horizon of clay to sandy clay loam that is 4 to 9 inches thick. Beneath this is weathered hornblende schist, diorite, and granite.

The Louisburg soils in this county are less steep than typical Lithosols. In more than 40 percent of the acreage of Louisburg soils, the slopes are 10 percent or less.

DESCRIPTIONS OF REPRESENTATIVE SOIL PROFILES

Louisa coarse sandy loam, 6 to 10 percent slopes:

Ap—0 to 10 inches, brown (7.5YR 4/4) coarse sandy loam; weak, fine, granular structure; very friable; contains much mica; many fragments of quartz mica schist on the surface; strongly acid; abrupt, wavy boundary; 4 to 12 inches thick.

C—10 to 36 inches +, reddish, highly weathered mica schist that can be broken down easily to friable sandy clay loam to loamy coarse sand.

Louisburg loamy coarse sand, 2 to 6 percent slopes:

Ap—0 to 6 inches, grayish-brown (10YR 5/2) to dark grayish-brown (10YR 4/2) loamy coarse sand; weak, fine, granular structure; very friable; many roots; few slightly weathered granite stones on the surface; strongly acid; abrupt, smooth boundary; 3 to 10 inches thick.

C1—6 to 18 inches, yellowish-brown (10YR 5/6) loamy coarse sand; weak, fine, granular structure; very friable; few roots; medium acid; gradual, wavy boundary; 0 to 20 inches thick.

C2—18 to 32 inches, yellowish-red (5YR 5/8) loamy coarse sand to coarse sandy loam; massive; highly weathered granitic rock; 0 to 24 inches thick.

Dr—32 inches, unweathered granite.

Wilkes stony loamy sand:

A00—½ inch to 0, fresh to partly decayed pine needles and twigs.

Ap—0 to 4 inches, dark yellowish-brown (10YR 4/4, moist) pale-brown (10YR 6/3, dry) stony loamy sand; weak, fine, granular structure; very friable; many roots; about 20 to 25 percent of the surface is covered by stones and cobbles of quartzite, hornblende, and diorite; strongly acid; abrupt, smooth boundary; 3 to 8 inches thick.

BC—4 to 12 inches, dark yellowish-brown (10YR 4/4) clay; strong, coarse, angular blocky and prismatic structure; extremely firm, extremely hard; thick, prominent clay films on the surfaces of peds; inside of peds highly mottled with fine, prominent mottles of black, green, and gray; fine fragments of weathered rock make up about 50 percent of the volume of peds; about 25 percent of material is stones and cobbles; strongly acid; diffuse, irregular boundary; 0 to 10 inches thick.

C—12 to 36 inches, gray, green, and black, partly weathered hornblende schist, granite, and diorite.

Dr—36 inches, hard hornblende schist, granite, and diorite.

Glossary

Acidity, soil. The degree of acidity or alkalinity of a soil is expressed in pH values, or in words, as follows:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4–7.8
Very strongly acid	4.5–5.0	Moderately alkaline	7.9–8.4
Strongly acid	5.1–5.5	Strongly alkaline	8.5–9.0
Medium acid	5.6–6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1–6.5		
Neutral	6.6–7.3		

Alluvium (alluvial deposits). Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Clay. See Texture, soil.

Colluvium (colluvial deposits). Mixed deposits of rock fragments and coarse soil material at the base of slopes. The deposits have accumulated as the result of soil creep, slides, or local wash.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. The consistence varies with the moisture content. Thus, a soil aggregate or clod may be hard when dry and plastic when wet. Terms used to describe consistence are—

Friable. When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump. Friable soils are easily tilled.

Firm. When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable. Firm soils are likely to be difficult to till.

Hard. When dry, is moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Indurated. Hard; very strongly cemented; brittle; does not soften under prolonged wetting.

Loose. Noncoherent whether moist or dry; will not hold together in a mass. Loose soils generally are easily tilled.

Plastic. When wet, retains an impressed shape and resists being deformed; will form a "wire" when rolled between thumb and forefinger. Plastic soils have a high content of clay and are difficult to till.

Soft. Weakly coherent and fragile; when dry, breaks to powder or individual grains under slight pressure.

Drainage. The rapidity and extent of the removal of water from the soil, especially by runoff, by flow through the soil to underground spaces, or by a combination of both processes.

Erosion. The wearing away of the solid material of the land surface by wind, moving water, or ice, or by such processes as landslides and creep.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. Nearly level land, consisting of stream sediment, that borders a stream and is subject to flooding unless protected artificially.

Friable. See Consistence, soil.

Galled spots. Small areas that are bare of vegetation because erosion has removed the soil material.

Horizon, soil. A layer of soil, approximately parallel to the surface that has distinct characteristics produced by soil-forming processes. These are the major soil horizons:

A horizon. The mineral horizon at the surface. It has an accumulation of organic matter, has been leached of soluble minerals and clay, or shows the effects of both.

B horizon. The horizon in which clay minerals or other material has accumulated, that has developed a characteristic blocky or prismatic structure, or that shows the effects of both processes.

C horizon. The unconsolidated material immediately under the true soil. In chemical, physical, and mineral composition, it is presumed to be similar to the material from which at least part of the overlying solum has developed.

D horizon. Any layer, or stratum, underlying the C horizon, or the B horizon if no C horizon is present. If this stratum is rock that presumably was the source of material in the C horizon, it is designated Dr.

Igneous rock. Rock that formed by the cooling of molten mineral material, such as granite, syenite, diorite, and gabbro.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. It may be limited by the infiltration capacity of the soil or by the rate at which water is applied to the soil surface.

Loam. See Texture, soil.

Metamorphic rock. A rock of any origin that has been completely changed physically from its original state by heat, pressure, and water. Igneous and sedimentary rocks may be changed to metamorphic rock, or one metamorphic rock may be changed to another. Examples are gneiss, schist, and slate.

Mottled (or mottling). Irregularly marked with spots of different colors.

Parent material (soil). The unconsolidated mass of rock material (or peat) from which the soil has formed.

Parent rock (soils). The rock from which the parent material of soils is formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability, soil. That quality of the soil that enables air or water to move through it. Air and water move readily through a moderately permeable soil, and such a soil is favorable for the growth of roots. Air and water move so slowly through a slowly permeable soil that the growth of roots may be retarded. Air and water move rapidly through a rapidly permeable soil, and roots can make good growth in such a soil.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material. (See also Horizon, soil.)

Reaction. See Acidity, soil.

Residuum. Unconsolidated and partly weathered parent material for soils, which is presumed to have developed from the same kind of rock as that on which it lies.

Sand. See Texture, soil.

Sedimentary rock. A rock composed of particles deposited from suspension in water. The chief sedimentary rocks are conglomerate, from gravel; sandstone, from sand; shale, from clay; and limestone, from soft masses of calcium carbonate.

Silt. See Texture, soil.

Slope. The incline of the surface of a soil. It is usually expressed as a percentage, that is, as the number of feet of fall per 100 feet of horizontal distance.

Soil separates. The individual size groups of soil particles. Sand, silt, and clay are soil separates.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying parent material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. Soil structure is classified according to grade, class, and type.

Grade. Distinctness of aggregation. Grade expresses the differential between cohesion within aggregates and adhesion between aggregates. Terms: Structureless (single grain or massive), weak, moderate, and strong.

Class. Size of soil aggregates. Terms: Very fine or very thin, fine or thin, medium, coarse or thick, and very coarse or very thick.

Type. Shapes of soil aggregates. Terms: Platy, prismatic, columnar, blocky, subangular blocky, granular, and crumb. (An example of grade, class, and type: Moderate, coarse, blocky.)

Subsoil. Technically, the B horizon of soils that have a distinct profile; roughly, that part of the profile below plow depth.

Substratum. Any layer beneath the solum, or true soil, the C or D horizon.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness.

Terrace (geological). A flat or undulating plain, ordinarily rather narrow and generally having a steep front, that borders a river, lake, or the sea. Stream terraces are commonly called *second bottoms*, as contrasted to *flood plains*, and they are seldom subject to overflow. The material in marine terraces was deposited by the sea, and these terraces are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Upland (geological). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
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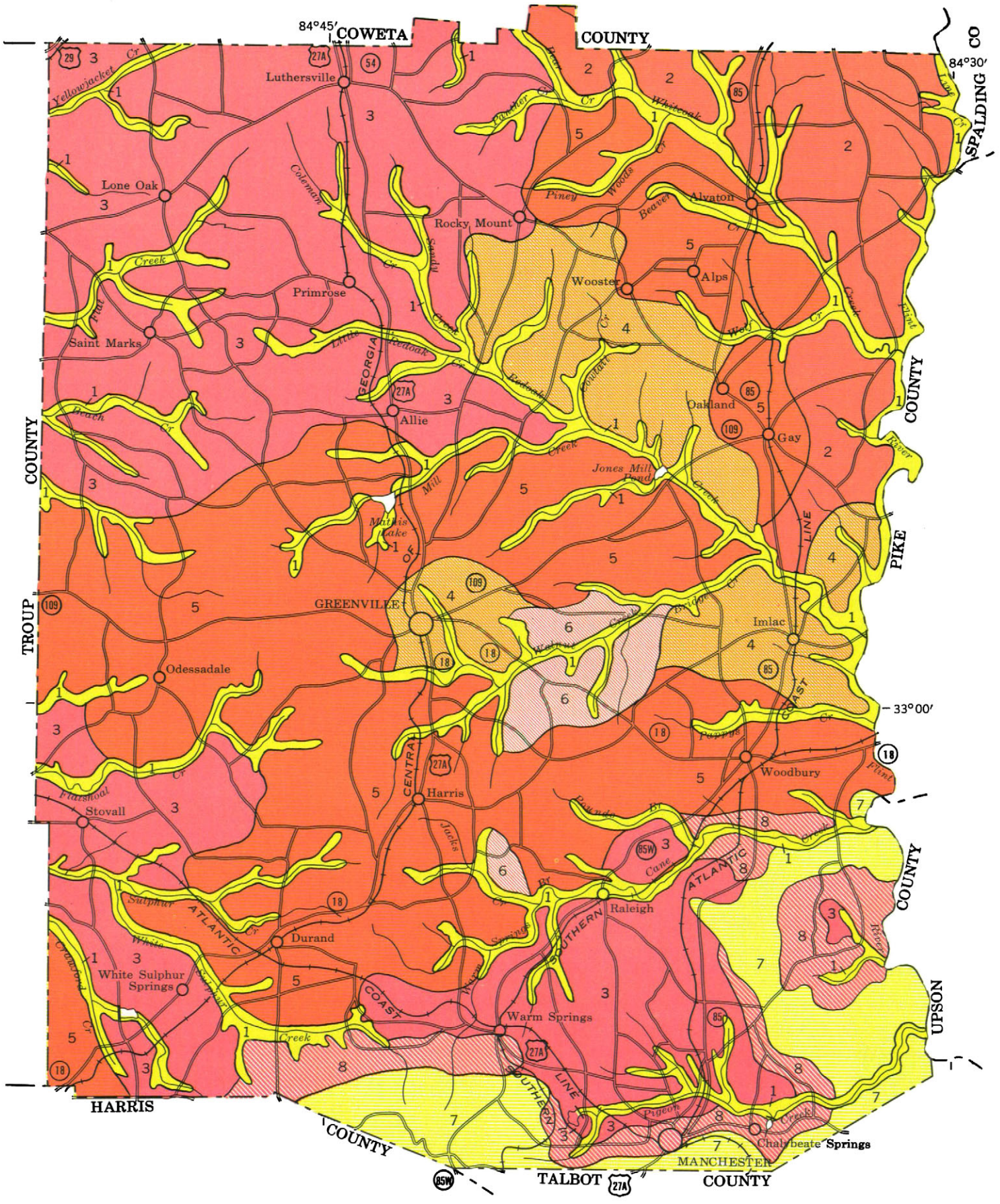
AGRICULTURAL EXPERIMENT STATIONS

GENERAL SOIL MAP
MERIWETHER COUNTY, GEORGIA



N

SOIL ASSOCIATIONS

1. Alluvial land-Chewacla association: Somewhat poorly drained soils on nearly level first bottoms
2. Appling-Colfax association: Deep, well-drained to somewhat poorly drained, moderately sloping to very gently sloping soils that have a surface layer of loamy sand and a mottled subsoil
3. Madison association: Deep, well-drained, highly micaceous soils that have a loamy surface layer and a subsoil of red clay loam
4. Lloyd-Davidson-Cecil association: Deep, well-drained, dark-colored soils that have a red, clayey subsoil
5. Cecil-Madison-Appling-Lloyd association: Deep, well-drained soils on ridges and slopes in the uplands
6. Cecil-Louisburg association: Deep to shallow soils over granitic rocks on broad divides or slope breaks
7. Cobbly and gravelly land-Habersham association: Cobbly or gravelly soils from sandstone and quartzite on Pine Mountain
8. Thurmont-Braddock association: Deep, well-drained, brown or red soils on lower slopes of Pine Mountain

Scale 1:190,080
1 0 1 2 3 4 Miles

March 1964

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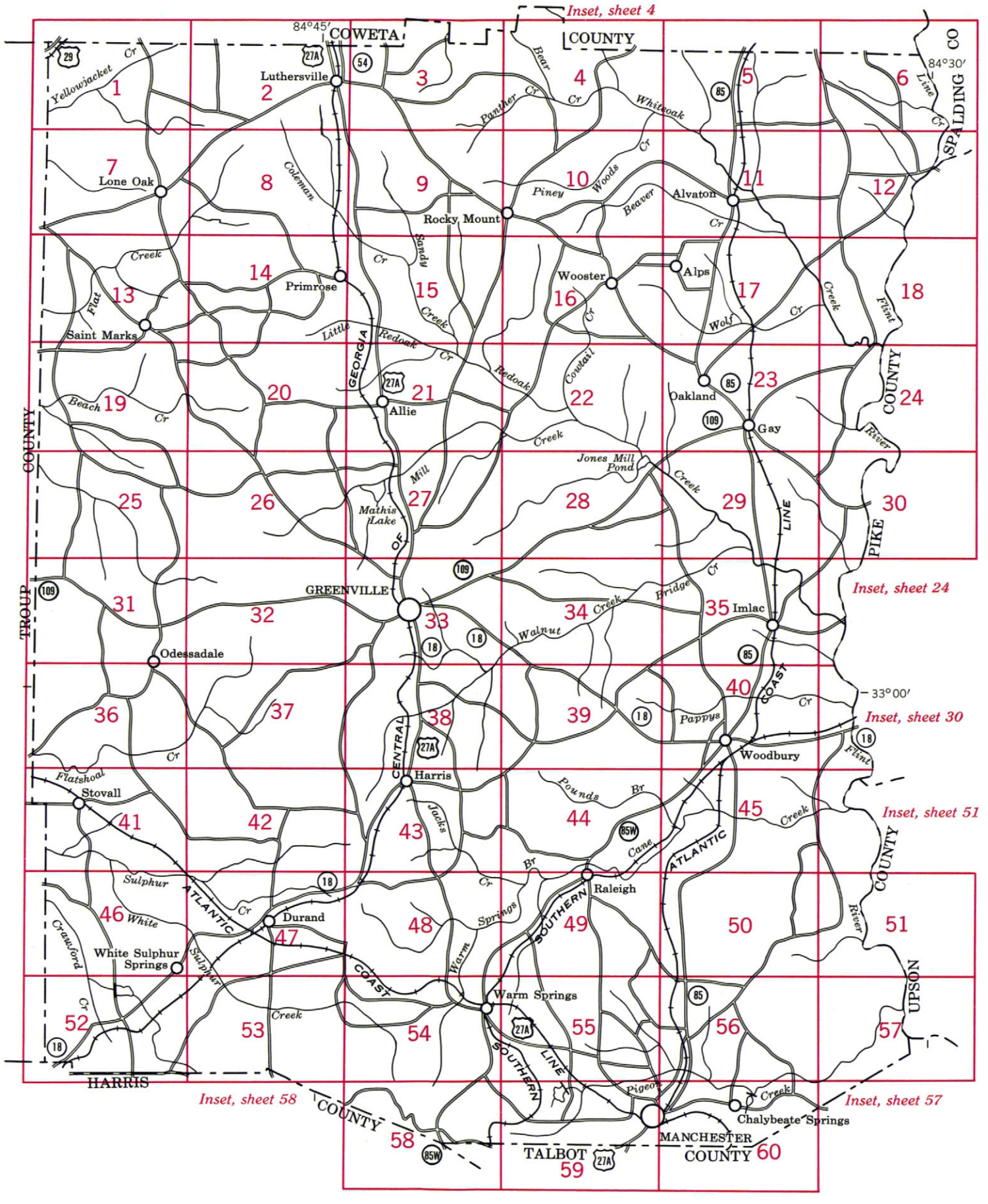
MERIWETHER COUNTY, GEORGIA



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Scale 1:190,080

1 0 1 2 3 4 Miles

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

MERIWETHER COUNTY, GEORGIA

UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATIONS

SOIL LEGEND

The first letter in each soil symbol is the initial of the soil name. If the third letter is a capital, it shows the range of slope from B, 2 to 6 percent, to F, 15 to 40 percent. A number after the slope letter denotes the class of erosion as given in the soil name.

SYMBOL	NAME
Afs	Augusta sandy loam
AkB	Altavista fine sandy loam, 2 to 6 percent slopes
Alm	Alluvial land
Alp	Alluvial land, moderately wet
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded
AnC4	Appling-Gullied land complex, 6 to 10 percent slopes
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded
ApB	Appling loamy sand, 2 to 6 percent slopes
ApB2	Appling loamy sand, 2 to 6 percent slopes, eroded
ApC2	Appling loamy sand, 6 to 10 percent slopes, eroded
Avp	Alluvial land, wet
BcB2	Braddock sandy loam, 2 to 6 percent slopes, eroded
BcC2	Braddock sandy loam, 6 to 10 percent slopes, eroded
BcD2	Braddock sandy loam, 10 to 15 percent slopes, eroded
BcE2	Braddock sandy loam, 15 to 25 percent slopes, eroded
BdC3	Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded
BdD3	Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded
Bfs	Buncombe loamy sand
CgC	Cobbly and gravelly land, sloping
CgD	Cobbly and gravelly land, strongly sloping
CgE	Cobbly and gravelly land, steep
ClB	Colfax loamy coarse sand, 2 to 6 percent slopes
ClC	Colfax loamy coarse sand, 6 to 10 percent slopes
ClC2	Colfax loamy coarse sand, 6 to 10 percent slopes, eroded
CpB	Colfax sandy loam, overwash, 2 to 6 percent slopes
Csl	Chewacla silt loam
CYB	Cecil sandy loam, 2 to 6 percent slopes
CYB2	Cecil sandy loam, 2 to 6 percent slopes, eroded
CYC	Cecil sandy loam, 6 to 10 percent slopes
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded
CYD2	Cecil sandy loam, 10 to 15 percent slopes, eroded
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded
DgB2	Davidson loam, 2 to 6 percent slopes, eroded
DgC2	Davidson loam, 6 to 10 percent slopes, eroded
DgE2	Davidson loam, 15 to 25 percent slopes, eroded
DhB3	Davidson clay loam, 2 to 6 percent slopes, severely eroded
DhC3	Davidson clay loam, 6 to 10 percent slopes, severely eroded
DhD3	Davidson clay loam, 10 to 15 percent slopes, severely eroded
Gul	Gullied land
HCC3	Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded
HDB	Habersham gravelly loamy sand, 2 to 6 percent slopes
HDC	Habersham gravelly loamy sand, 6 to 10 percent slopes
HDD	Habersham gravelly loamy sand, 10 to 15 percent slopes
IbB2	Iredell sandy loam, 2 to 6 percent slopes, eroded
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes
Lcm	Local alluvial land
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded
LDD	Louisburg stony loamy coarse sand, 10 to 15 percent slopes
LDE	Louisburg stony loamy coarse sand, 15 to 25 percent slopes
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes
LEC	Louisa coarse sandy loam, 6 to 10 percent slopes
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes
LED	Louisa coarse sandy loam, 10 to 15 percent slopes
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded
LEE	Louisa coarse sandy loam, 15 to 25 percent slopes
MEF2	Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded
MgB2	Madison sandy loam, 2 to 6 percent slopes, eroded
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded
MgD2	Madison sandy loam, 10 to 15 percent slopes, eroded
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded
MlC4	Madison-Gullied land complex, 6 to 10 percent slopes
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded
MlD4	Madison-Gullied land complex, 10 to 15 percent slopes
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded
MvC3	Musella clay loam, 2 to 10 percent slopes, severely eroded
MvD2	Musella clay loam, 10 to 15 percent slopes, eroded
MvD3	Musella clay loam, 10 to 15 percent slopes, severely eroded
Roc	Rock land
Ron	Roanoke silt loam
TkB	Thurmont loamy sand, 2 to 6 percent slopes
TkC	Thurmont loamy sand, 6 to 10 percent slopes
TkD	Thurmont loamy sand, 10 to 15 percent slopes
VbC3	Vance sandy clay loam, 6 to 10 percent slopes, severely eroded
VdB2	Vance loamy coarse sand, 2 to 6 percent slopes, eroded
VdC2	Vance loamy coarse sand, 6 to 10 percent slopes, eroded
VdD2	Vance loamy coarse sand, 10 to 15 percent slopes, eroded
Weh	Wehadkee silty clay loam
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded
WgC2	Wickham fine sandy loam, 6 to 10 percent slopes, eroded
WnC3	Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded
WoB	Worsham coarse sandy loam, 2 to 6 percent slopes

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferries
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church
- Station

Mines and Quarries
- Mine dump
- Pits, gravel or other

Power lines

Pipe lines

Cemeteries

Dams

Levees

Tanks

Oil wells

Forest fire or lookout station

BOUNDARIES

- National or state
- County
- Reservation
- Land grant

DRAINAGE

Streams
- Perennial
- Intermittent, unclass.

Canals and ditches (CANAL / DITCH)

Lakes and ponds
- Perennial
- Intermittent

Wells (flowing)

Springs

Marsh

Wet spot

RELIEF

Escarpments
- Bedrock
- Other

Prominent peaks

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gullies

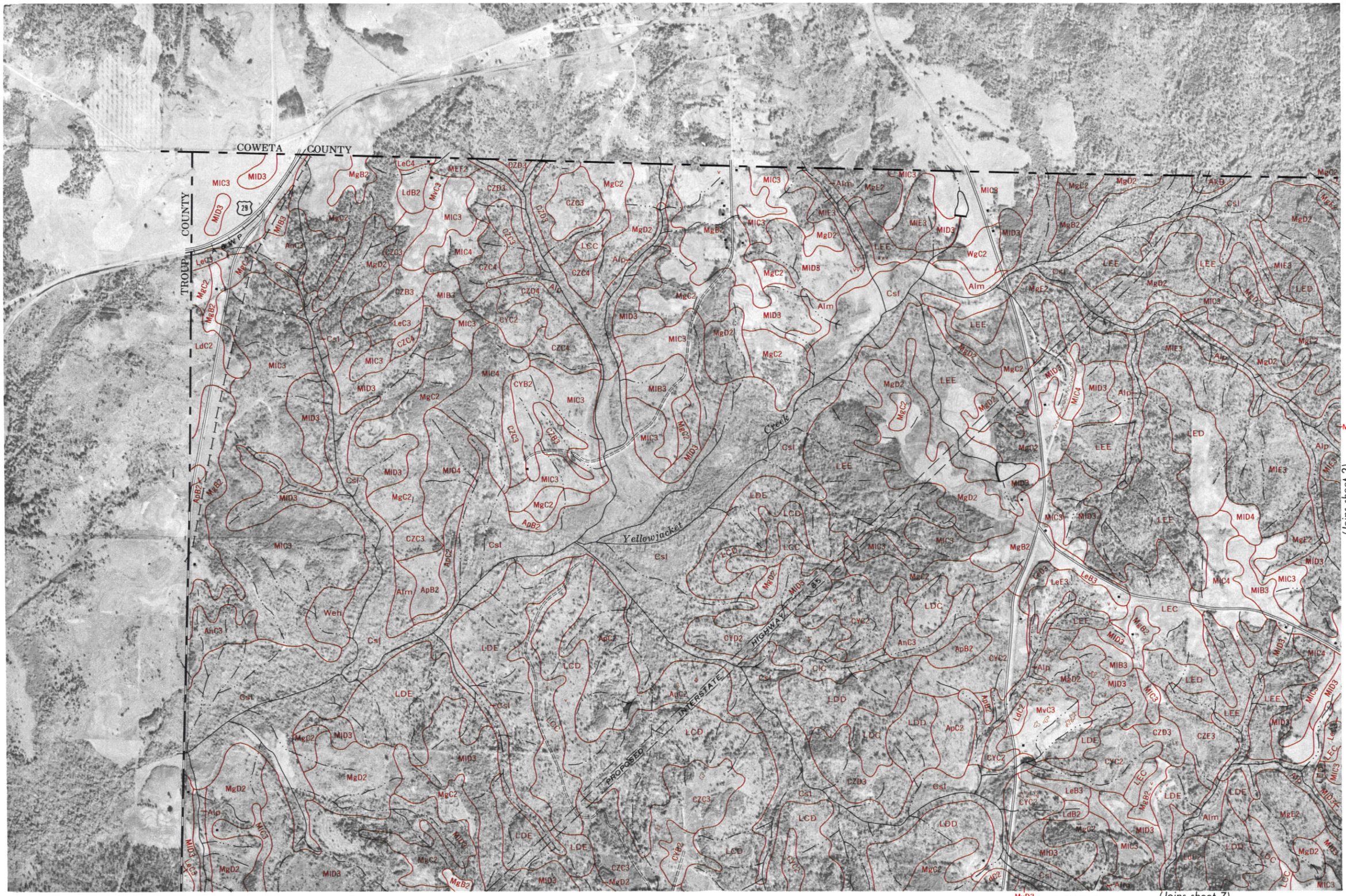
Soil map constructed 1963 by Cartographic Division, Soil Conservation Service, USDA from 1958 aerial photographs. Controlled mosaic based on Georgia plane coordinate system, west zone, transverse Mercator projection, 1927 North American datum.

GUIDE TO MAPPING UNITS

[See table 4, p. 8, for the acreage and proportionate extent of the soils, and table 5, p. 41, for the estimated yields. To find the engineering properties of the soils, see section beginning on p. 59. Dashes show that a particular soil was not placed in the specified group because it is not suited to such use]

Map symbol	Mapping unit	Page	Capability unit		Woodland group		Wildlife group	
			Symbol	Page	Number	Page	Number	Page
Afs	Augusta sandy loam	12	IIIw–3	35	11	54	10	58
AkB	Altavista fine sandy loam, 2 to 6 percent slopes	10	IIe–2	32	6	53	1	57
Alm	Alluvial land	10	IIw–2	33	4	52	9	58
Alp	Alluvial land, moderately wet	10	IIIw–2	35	11	54	10	58
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	12	IVe–1	36	7	53	3	57
AnC4	Appling-Gullied land complex, 6 to 10 percent slopes	12	VIe–2	38	7	53	4	57
AnD3	Appling sandy clay loam, 10 to 15 percent slopes, severely eroded	12	VIe–2	38	7	53	4	57
ApB	Appling loamy sand, 2 to 6 percent slopes	11	IIe–2	32	8	54	1	57
ApB2	Appling loamy sand, 2 to 6 percent slopes, eroded	11	IIe–2	32	8	54	1	57
ApC2	Appling loamy sand, 6 to 10 percent slopes, eroded	12	IIIe–2	34	8	54	1	57
Avp	Alluvial land, wet	10	IVw–1	38	11	54	11	59
BcB2	Braddock sandy loam, 2 to 6 percent slopes, eroded	13	IIe–1	31	1	52	1	57
BcC2	Braddock sandy loam, 6 to 10 percent slopes, eroded	13	IIIe–1	33	1	52	1	57
BcD2	Braddock sandy loam, 10 to 15 percent slopes, eroded	13	IVe–1	36	1	52	2	57
BcE2	Braddock sandy loam, 15 to 25 percent slopes, eroded	13	VIe–2	38	1	52	2	57
BdC3	Braddock sandy clay loam, 6 to 10 percent slopes, severely eroded	13	IVe–1	36	2	52	3	57
BdD3	Braddock sandy clay loam, 10 to 15 percent slopes, severely eroded	13	VIe–2	38	2	52	4	57
Bfs	Buncombe loamy sand	14	IIIs–1	36	4	52	----	----
CgC	Cobbly and gravelly land, sloping	16	VIs–1	39	3	52	8	58
CgD	Cobbly and gravelly land, strongly sloping	16	VIs–1	39	3	52	8	58
CgE	Cobbly and gravelly land, steep	16	VIIe–2	40	3	52	8	58
ClB	Colfax loamy coarse sand, 2 to 6 percent slopes	17	IIIw–3	35	9	54	10	58
ClC	Colfax loamy coarse sand, 6 to 10 percent slopes	17	VIe–2	38	9	54	10	58
ClC2	Colfax loamy coarse sand, 6 to 10 percent slopes, eroded	17	VIe–2	38	9	54	10	58
CpB	Colfax sandy loam, overwash, 2 to 6 percent slopes	17	IIIw–3	35	9	54	10	58
Csl	Chewacla silt loam	16	IIIw–2	35	11	54	10	58
CYB	Cecil sandy loam, 2 to 6 percent slopes	14	IIe–1	31	5	53	1	57
CYB2	Cecil sandy loam, 2 to 6 percent slopes, eroded	14	IIe–1	31	5	53	1	57
CYC	Cecil sandy loam, 6 to 10 percent slopes	14	IIIe–1	33	5	53	1	57
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded	15	IIIe–1	33	5	53	1	57
CYD2	Cecil sandy loam, 10 to 15 percent slopes, eroded	15	IVe–1	36	5	53	2	57
CZB3	Cecil sandy clay loam, 2 to 6 percent slopes, severely eroded	15	IIIe–1	33	7	53	3	57
CZC3	Cecil sandy clay loam, 6 to 10 percent slopes, severely eroded	15	IVe–1	36	7	53	3	57
CZC4	Cecil-Gullied land complex, 6 to 10 percent slopes	15	VIe–2	38	7	53	4	57
CZD3	Cecil sandy clay loam, 10 to 15 percent slopes, severely eroded	15	VIe–2	38	7	53	4	57
CZD4	Cecil-Gullied land complex, 10 to 15 percent slopes	15	VIIe–1	39	7	53	4	57
CZE3	Cecil sandy clay loam, 15 to 25 percent slopes, severely eroded	15	VIIe–1	39	7	53	4	57
DgB2	Davidson loam, 2 to 6 percent slopes, eroded	18	IIe–1	31	5	53	1	57
DgC2	Davidson loam, 6 to 10 percent slopes, eroded	18	IIIe–1	33	5	53	1	57
DgE2	Davidson loam, 15 to 25 percent slopes, eroded	18	VIe–2	38	5	53	2	57
DhB3	Davidson clay loam, 2 to 6 percent slopes, severely eroded	18	IIIe–1	33	7	53	3	57
DhC3	Davidson clay loam, 6 to 10 percert slopes, severely eroded	18	IVe–1	36	7	53	3	57
DhD3	Davidson clay loam, 10 to 15 percent slopes, severely eroded	18	IVe–1	36	7	53	4	57
Gul	Gullied land	18	VIIe–4	40	----	----	4	57
HCC3	Habersham sandy clay loam, 6 to 10 percent slopes, severely eroded	19	IVe–1	36	2	52	3	57
HDB	Habersham gravelly loamy sand, 2 to 6 percent slopes	19	IIe–2	32	1	52	1	57
HDC	Habersham gravelly loamy sand, 6 to 10 percent slopes	19	IIIe–2	34	1	52	1	57
HDD	Habersham gravelly loamy sand, 10 to 15 percent slopes	19	IVe–1	36	1	52	2	57
IbB2	Iredell sandy loam, 2 to 6 percent slopes, eroded	20	IIe–3	32	10	54	----	----
LCB	Louisburg loamy coarse sand, 2 to 6 percent slopes	22	IIIe–5	35	8	54	7	58
LCC	Louisburg loamy coarse sand, 6 to 10 percent slopes	23	IVe–4	37	8	54	7	58
LCD	Louisburg loamy coarse sand, 10 to 15 percent slopes	23	VIe–3	39	8	54	8	58
Lcm	Local alluvial land	21	I–1	31	4	52	9	58
LdB2	Lloyd sandy loam, 2 to 6 percent slopes, eroded	20	IIe–1	31	5	53	1	57
LdC2	Lloyd sandy loam, 6 to 10 percent slopes, eroded	20	IIIe–1	33	5	53	1	57
LDC	Louisburg stony loamy coarse sand, 6 to 10 percent slopes	23	VIs–1	39	8	54	8	58
LdD2	Lloyd sandy loam, 10 to 15 percent slopes, eroded	20	IVe–1	36	5	53	2	57
LDD	Louisburg stony loamy coarse sand, 10 to 15 percent slopes	23	VIIe–2	40	8	54	8	58
LDE	Louisburg stony loamy coarse sand, 15 to 25 percent slopes	23	VIIe–2	40	8	54	8	58
LeB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded	21	IIIe–1	33	7	53	3	57
LeC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded	21	IVe–1	36	7	53	3	57
LeC4	Lloyd-Gullied land complex, 6 to 10 percent slopes	21	VIe–2	38	7	53	4	57
LEC	Louisa coarse sandy loam, 6 to 10 percent slopes	22	IVe–4	37	8	54	7	58
LeD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded	21	IVe–1	36	7	53	4	57
LeD4	Lloyd-Gullied land complex, 10 to 15 percent slopes	21	VIe–2	38	7	53	4	57
LED	Louisa coarse sandy loam, 10 to 15 percent slopes	22	VIe–3	39	8	54	8	58
LeE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded	21	VIe–2	38	7	53	4	57
LEE	Louisa coarse sandy loam, 15 to 25 percent slopes	22	VIIe–2	40	8	54	8	58
MEF2	Musella and Wilkes stony soils, 15 to 40 percent slopes, eroded	25	VIIe–2	40	6	53	8	58
MgB2	Madison sandy loam, 2 to 6 percent slopes, eroded	23	IIe–1	31	5	53	1	57
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded	24	IIIe–1	33	5	53	1	57
MgD2	Madison sandy loam, 10 to 15 percent slopes, eroded	24	IVe–1	36	5	53	2	57
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded	24	VIe–2	38	5	53	2	57
MlB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	24	IIIe–1	33	7	53	3	57
MlC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	24	IVe–1	36	7	53	3	57
MlC4	Madison-Gullied land complex, 6 to 10 percent slopes	25	VIe–2	38	7	53	4	57
MlD3	Madison sandy clay loam, 10 to 15 percent slopes, severely eroded	24	VIe–2	38	7	53	4	57
MlD4	Madison-Gullied land complex, 10 to 15 percent slopes	25	VIIe–1	39	7	53	4	57
MlE3	Madison sandy clay loam, 15 to 25 percent slopes, severely eroded	24	VIIe–1	39	7	53	4	57
MvC3	Musella clay loam, 2 to 10 percent slopes, severely eroded	25	IVe–2	37	6	53	6	58
MvD2	Musella clay loam, 10 to 15 percent slopes, eroded	25	IVe–2	37	6	53	6	58
MvD3	Musella clay loam, 10 to 15 percent slopes, severely eroded	25	VIe–4	39	6	53	6	58
Roc	Rock land	26	VIIIs–1	40	----	----	8	58
Ron	Roanoke silt loam	26	IVw–1	38	11	54	11	59
TkB	Thurmont loamy sand, 2 to 6 percent slopes	26	IIe–2	32	1	52	1	57
TkC	Thurmont loamy sand, 6 to 10 percent slopes	27	IIIe–2	34	1	52	1	57
TkD	Thurmont loamy sand, 10 to 15 percent slopes	27	IVe–1	36	1	52	2	57
VbC3	Vance sandy clay loam, 6 to 10 percent slopes, severely eroded	28	IVe–2	37	9	54	3	57
VdB2	Vance loamy coarse sand, 2 to 6 percent slopes, eroded	27	IIe–3	32	8	54	5	58
VdC2	Vance loamy coarse sand, 6 to 10 percent slopes, eroded	27	IIIe–3	34	8	54	5	58
VdD2	Vance loamy coarse sand, 10 to 15 percent slopes, eroded	28	IVe–2	37	8	54	2	57
Weh	Wehadkee silty clay loam	28	IVw–1	38	11	54	11	59
WgB2	Wickham fine sandy loam, 2 to 6 percent slopes, eroded	28	IIe–1	31	6	53	1	57
WgC2	Wickham fine sandy loam, 6 to 10 percent slopes, eroded	29	IIIe–1	33	6	53	1	57
WnC3	Wickham sandy clay loam, 6 to 10 percent slopes, severely eroded	29	IVe–1	36	7	53	3	57
WoB	Worsham coarse sandy loam, 2 to 6 percent slopes	29	Vw–1	38	10	54	11	59

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia College of Agriculture, Agricultural Experiment Stations.



2

N

COWETA COUNTY

Luthersville

GENTRAL OF GEORGIA

(Joins sheet 1)

(Joins sheet 3)

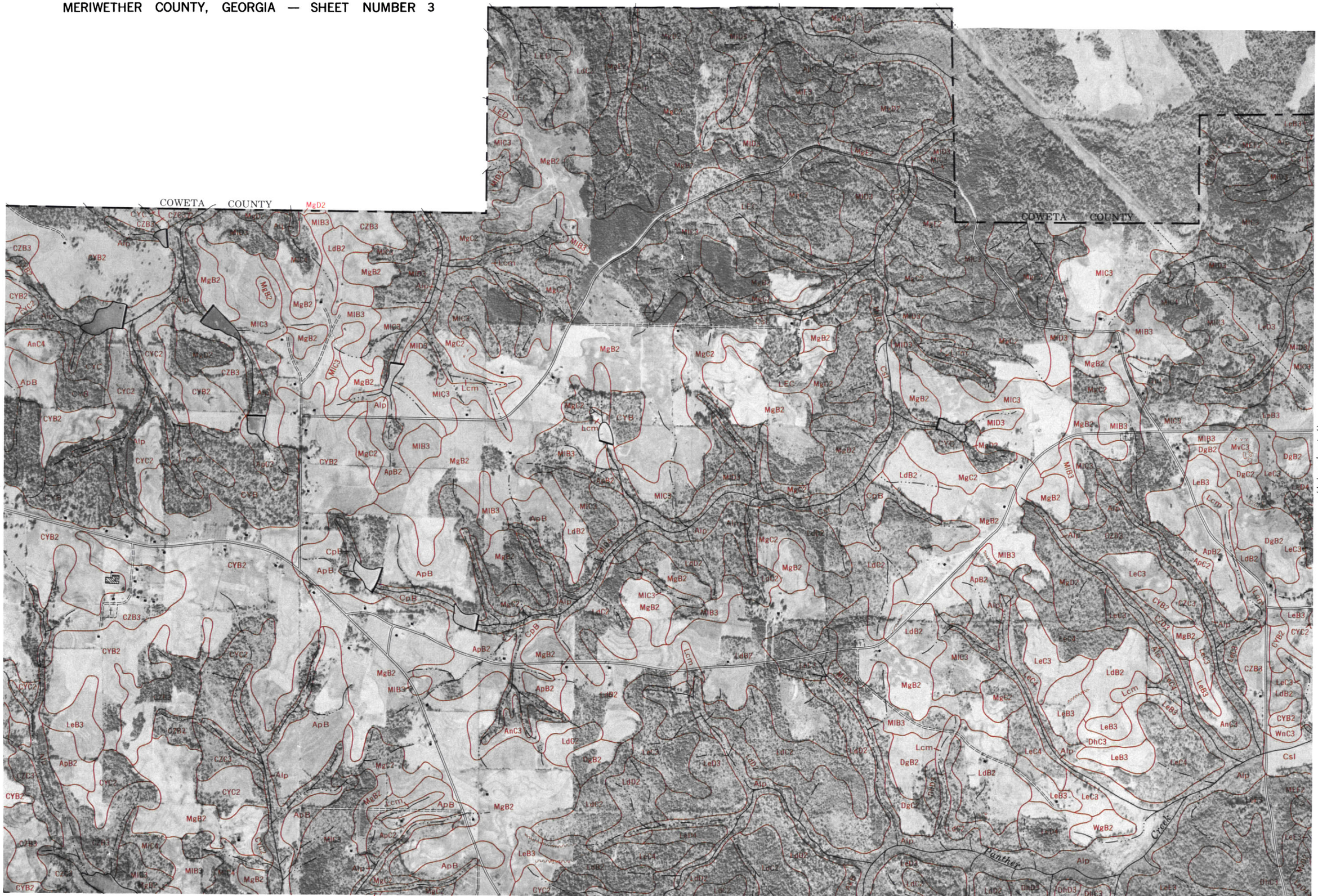
(Joins sheet 8)

0 .72 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 3



This map is one of a set compiled in 1963 as part of a soil Survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 4

(Joins inset)

N

COWETA COUNTY

(Joins upper left)

COWETA COUNTY

Whiteoak Church

Panther Creek

Bear Creek

Piney Woods Ch

(Joins sheet 3)

(Joins sheet 5)

(Joins sheet 10)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

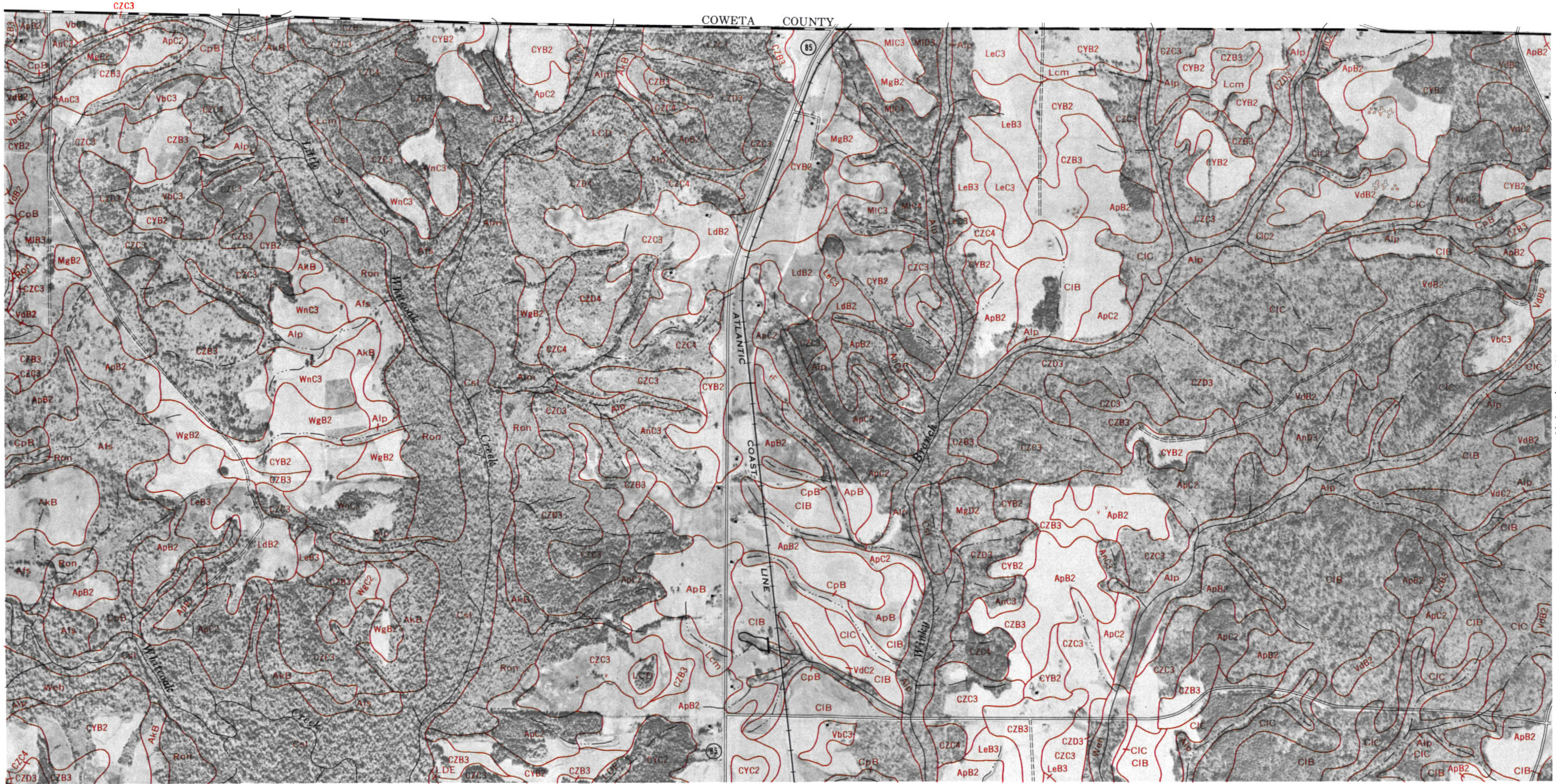
MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 5

5

N

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

(Joins sheet 4)



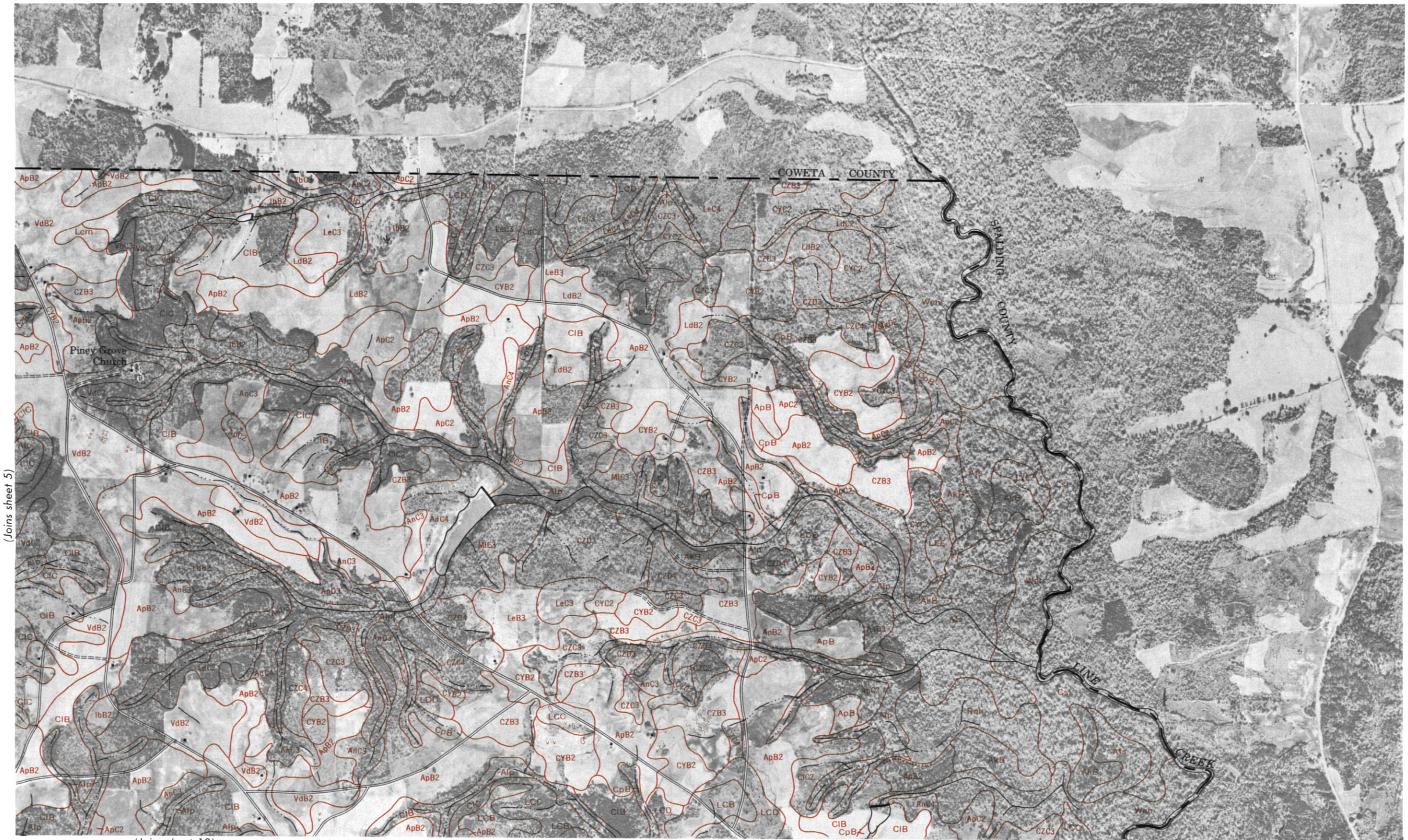
(Joins sheet 6)

(Joins sheet 11)

0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

6

N



(Joins sheet 5)

(Joins sheet 12)

0 ½ 1 Mile

Scale 1:15 840

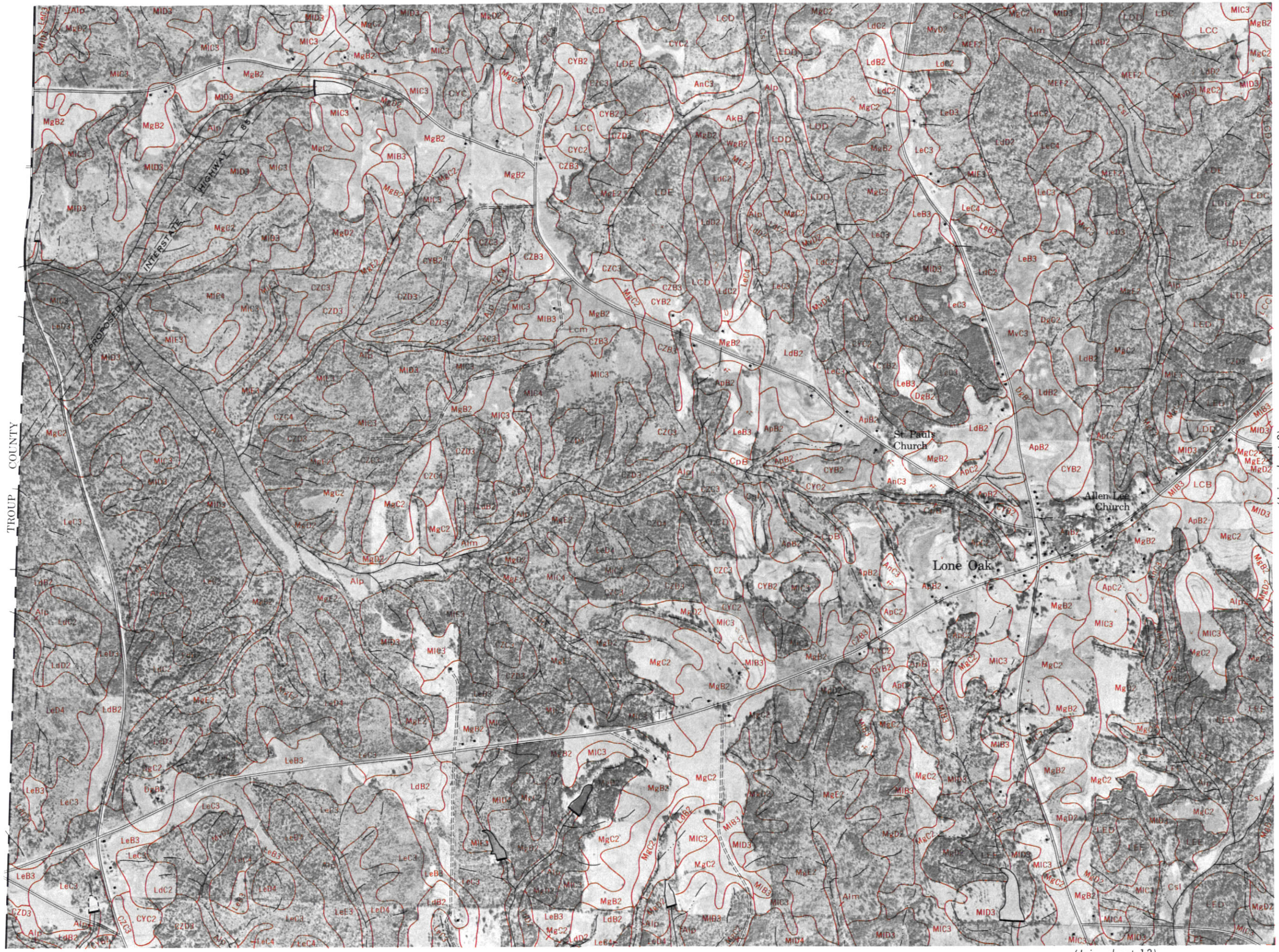
0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 7

(Joins sheet 1)

7

N



(Joins sheet 8)

(Joins sheet 13)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia,College of Agriculture, Agricultural Experiment Stations

8

N

(Joins sheet 2)

(Joins sheet 7)

(Joins sheet 9)

(Joins sheet 14)

Zion Hill Church

Coleman Creek

CENTRAL OF GEORGIA

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 9

(Joins sheet 3)

9

N

(Joins sheet 8)

(Joins sheet 10)

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Piney Woods Cr.

Bethel Church

Rocky Mount

Columbus Cr.

Sandy Creek

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 15)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 10

10

N

(Joins sheet 4)

(Joins sheet 9)

(Joins sheet 11)

(Joins sheet 16)

Rocky Mount

Woods

Creek

Scale 1:15 840

0 ½ 1 Mile

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 11

(Joins sheet 5)

11

N

(Joins sheet 10)

(Joins sheet 12)

Alvaton

WHITEOAK CREEK

COASTLINE ATLANTIC

Beaver Creek

Whitby Branch

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 17)

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MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 12

12

(Joins sheet 6)

N

(Joins sheet 11)

(Joins sheet 18)

Mt. Carmel Church

SPALDING COUNTY

PIKE COUNTY

FLINT RIVER

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 7)

13

N

TROUP COUNTY

Flint Creek

Union Church

Saint Marks

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 19)

(Joins sheet 14)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 14

(Joins sheet 8)

N

(Joins sheet 13)

(Joins sheet 15)

(Joins sheet 20)

Primrose

Redoak Creek

Little

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 9)

(Joins sheet 14)

(Joins sheet 16)

(Joins sheet 21)

15

N

Walker Temple Church

Andrews Mill

Coleman Creek

Sandy Creek

Redoak Creek

Little Redoak Creek

GEORGIA

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

16

N

(Joins sheet 10)

(Joins sheet 15)

(Joins sheet 17)

(Joins sheet 22)

Wooster

New Hope Church

Sunnyside Church

Cypress Creek

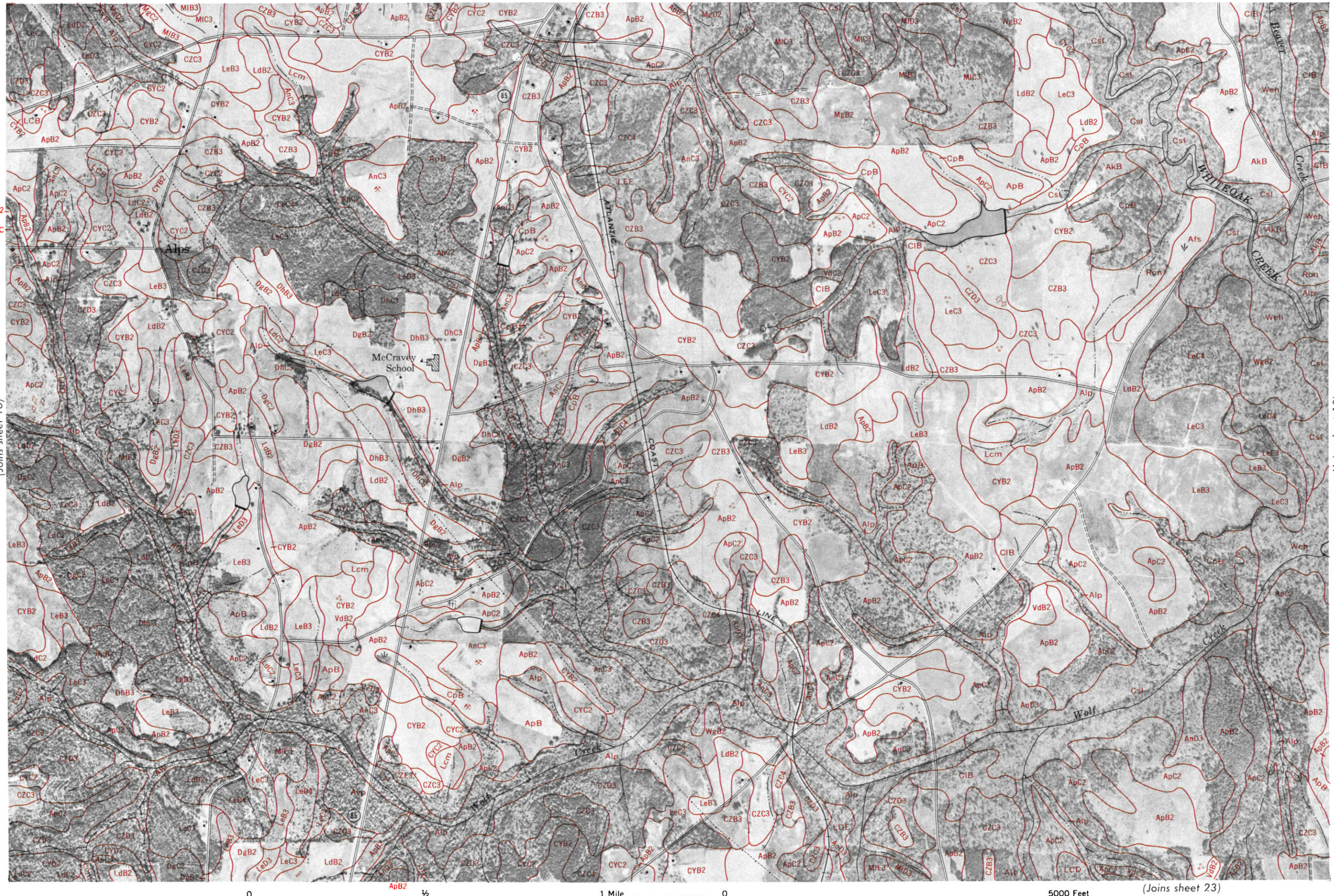
Scale 1:15 840

0 ½ 1 Mile

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 17

(Joins sheet 11)



(Joins sheet 16)

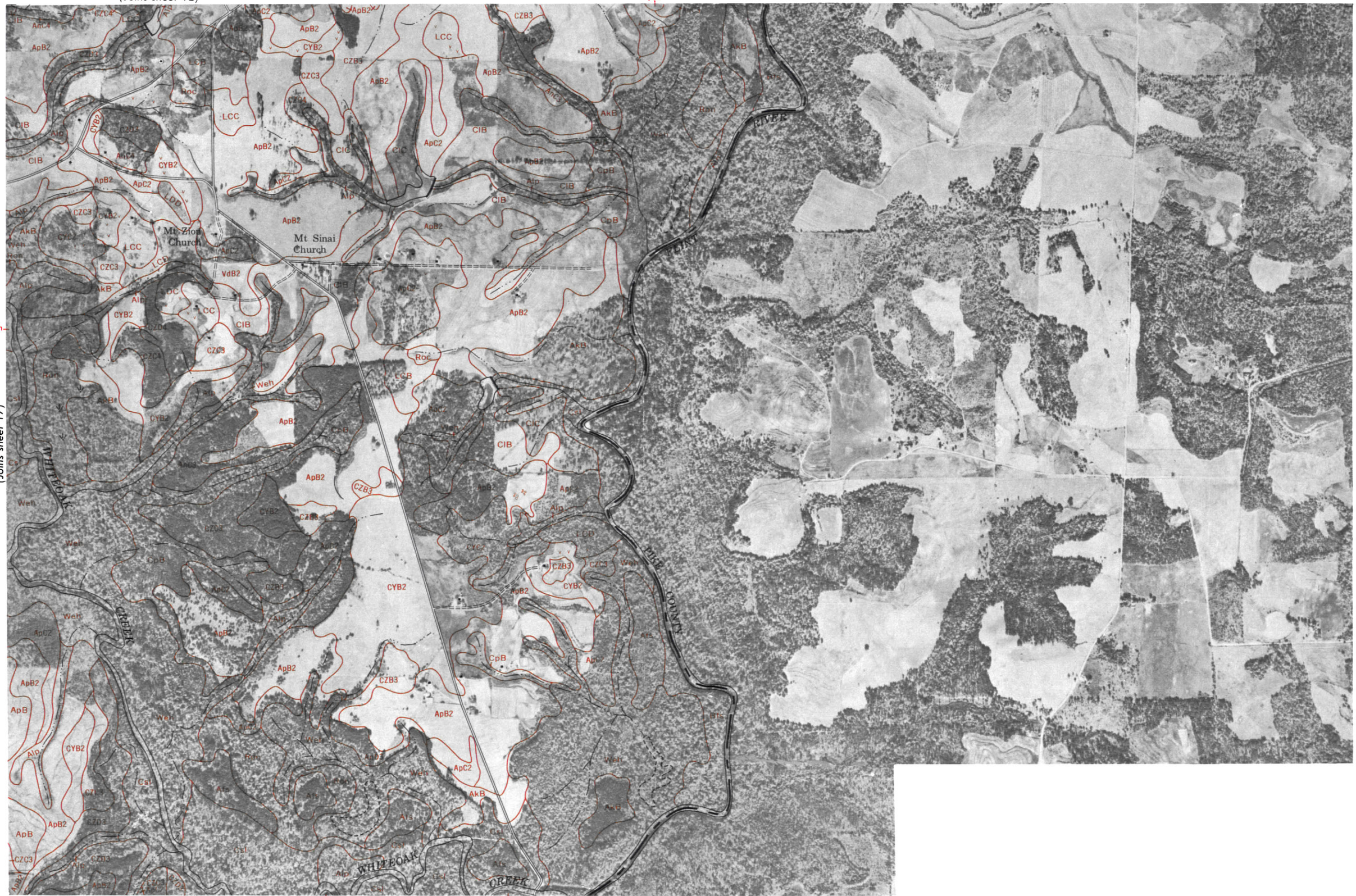
(Joins sheet 18)

(Joins sheet 23)

18

(Joins sheet 12)

N



(Joins sheet 17)

(Joins sheet 24)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 19

(Joins sheet 13)

(19)

N

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

TROUP COUNTY

Pigeon Creek

Mt Perry Church

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 20)

(Joins sheet 25)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 20

20

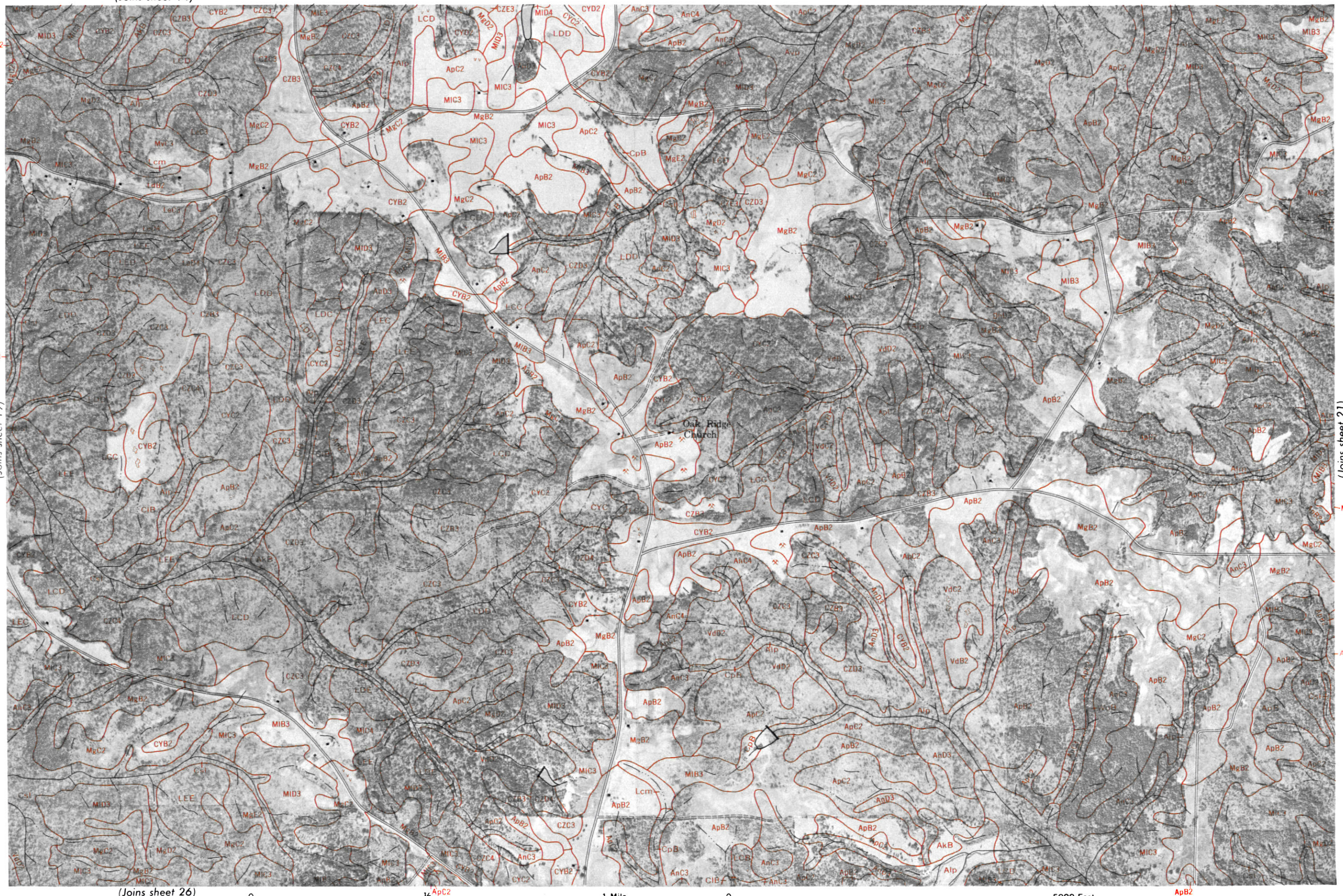
(Joins sheet 14)

N

(Joins sheet 19)

(Joins sheet 21)

(Joins sheet 26)



0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 15)

N

(Joins sheet 20)

(Joins sheet 22)

(Joins sheet 27)

Allie

Flat Rock Church

Little Redoak Creek

Redoak Creek

Mill Creek

CENTRALE

GEORGIA

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

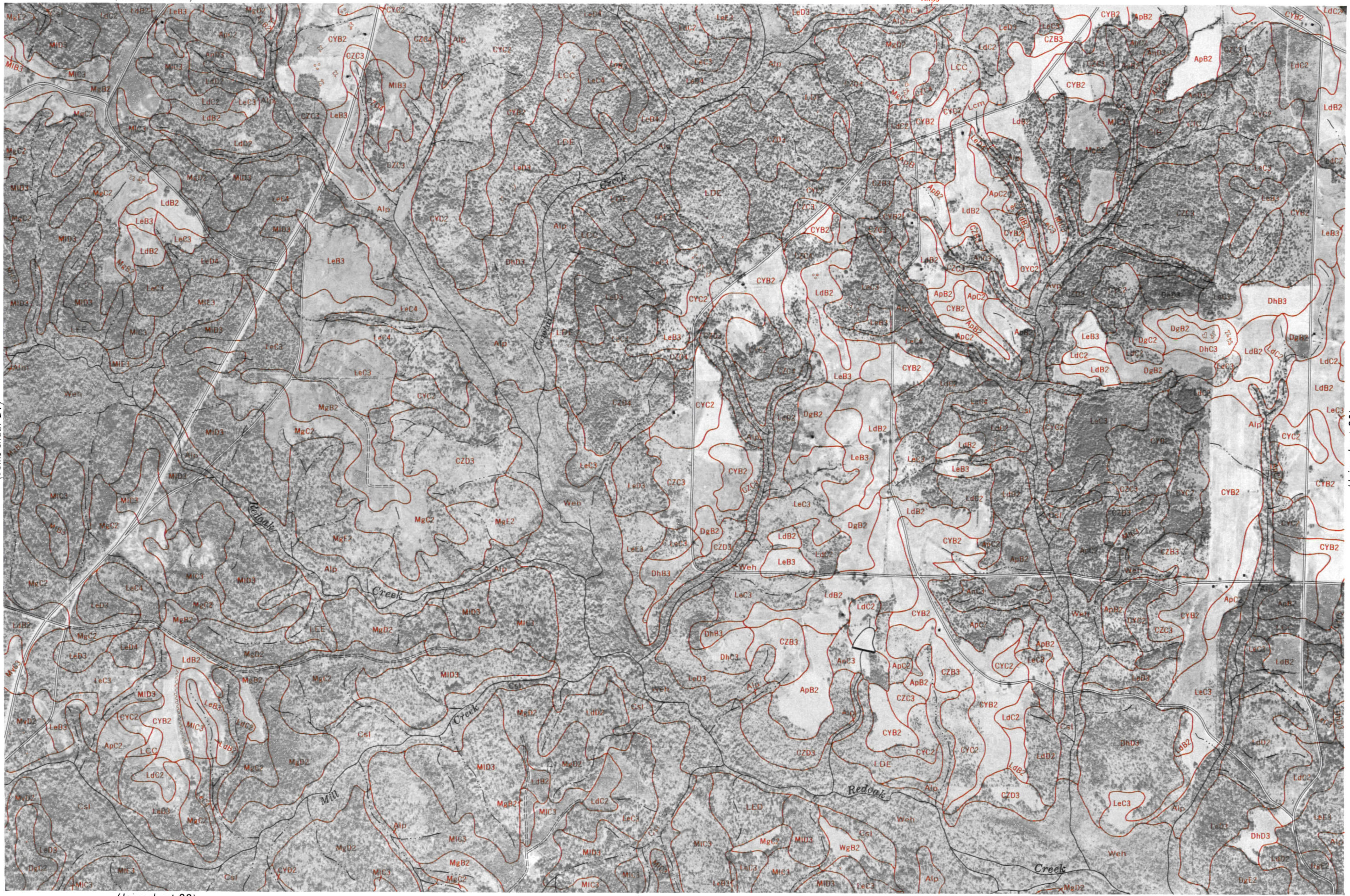
This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 22

(Joins sheet 16)

N

(Joins sheet 21)



(Joins sheet 23)

(Joins sheet 28)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 23

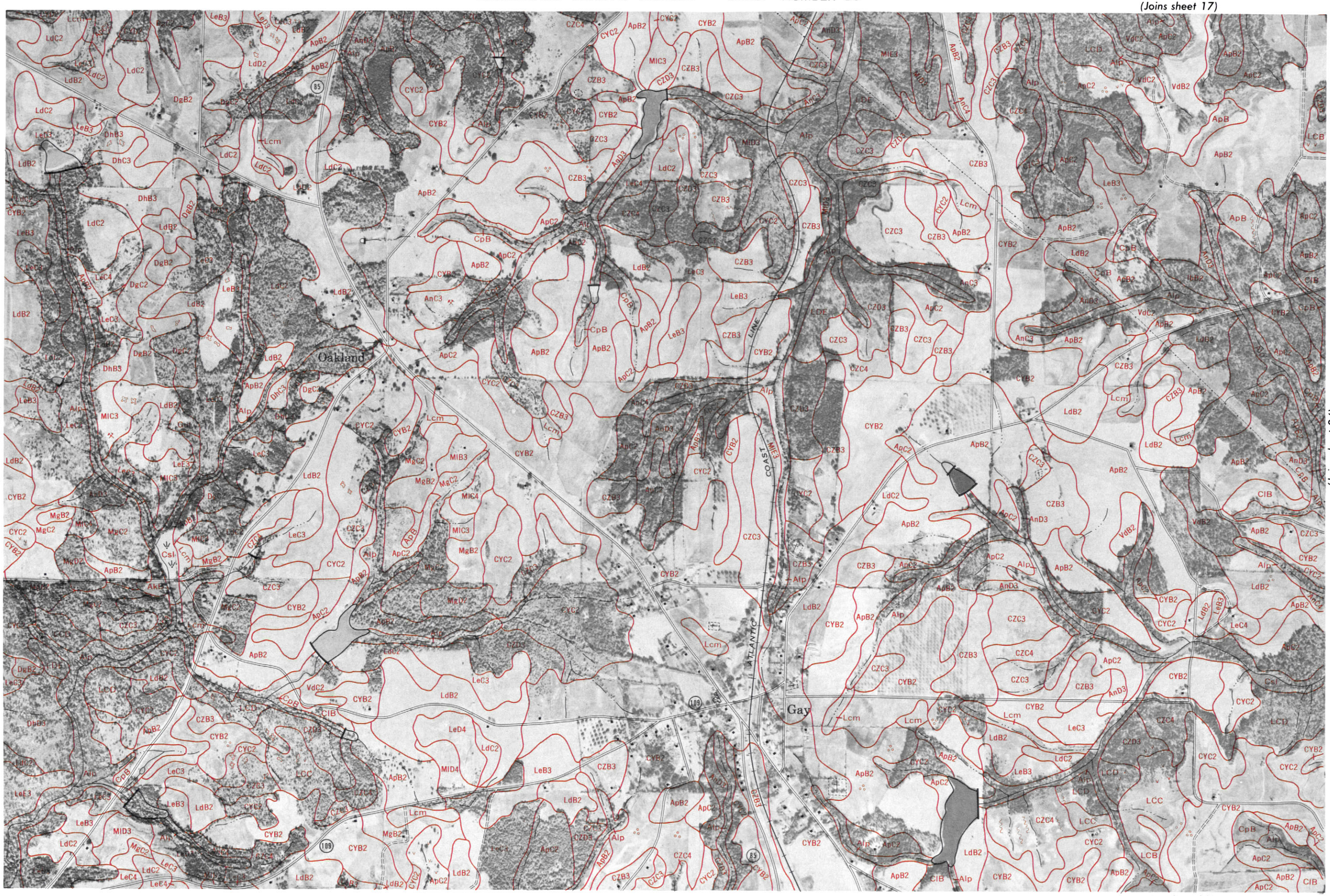
(Joins sheet 17)

(Joins sheet 22)

(Joins sheet 24)

(Joins sheet 29)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.



0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

24

N

(Joins sheet 18)

(Joins sheet 23)

(Joins sheet 30)

(Joins sheet 30)

(Joins sheet 35)

(Joins inset, sheet 30)

RIVER

FLINT

PIKE COUNTY

REDOAK CREEK

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 19)

25

N

(Joins sheet 26)

(Joins sheet 31)

TROUP COUNTY

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

26

N

(Joins sheet 20)

(Joins sheet 25)

(Joins sheet 27)

(Joins sheet 32)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 27

(Joins sheet 21)

27

N

(Joins sheet 26)

(Joins sheet 28)

Mt. Pleasant Church

Mathis Lake

Mill Creek

CENTRAL OF GEORGIA

LEE

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 33)

28

(Joins sheet 22)

N

Jones Mill Pond

(Joins sheet 27)

(Joins sheet 29)

(Joins sheet 34)

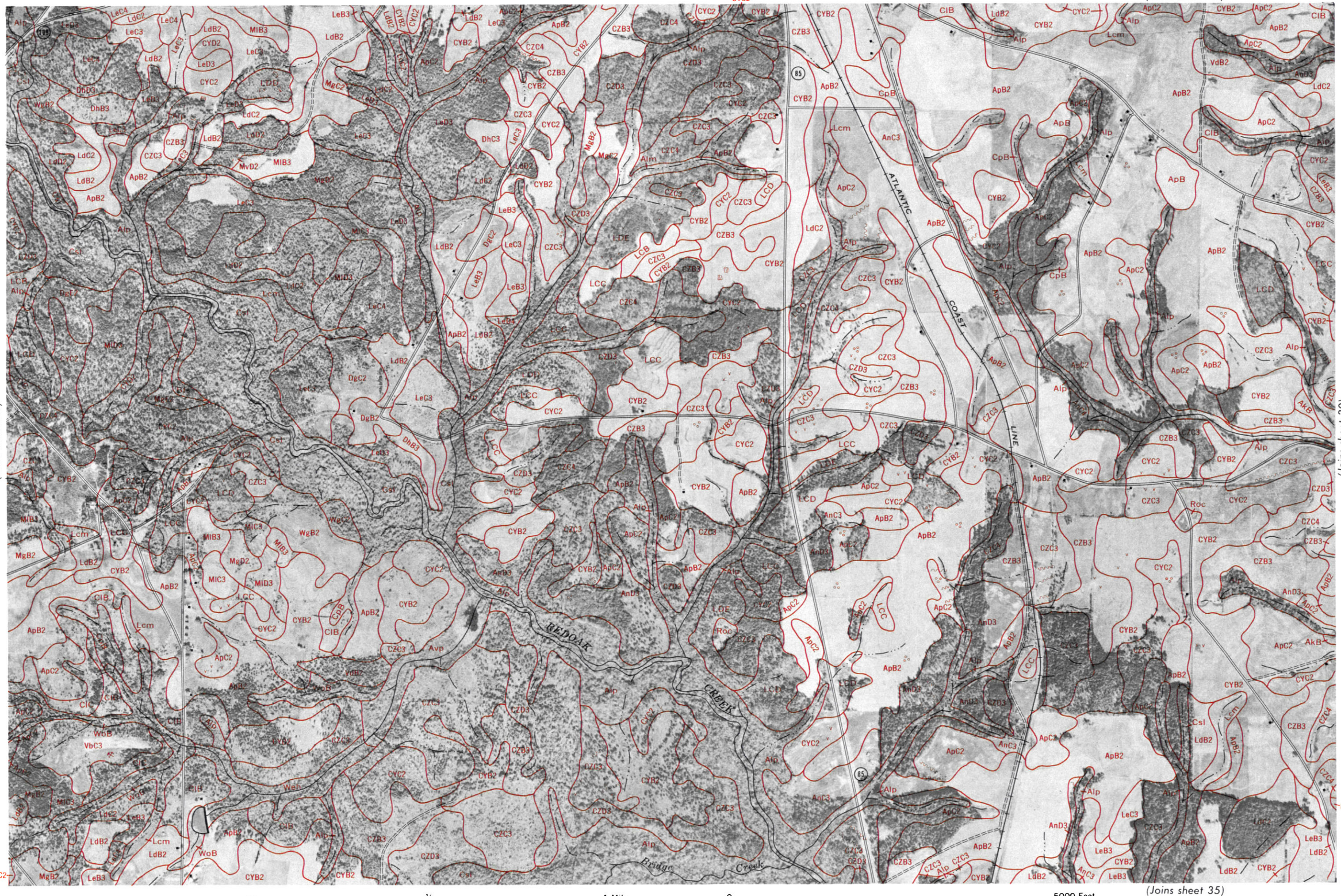
0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 23)

N



0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 30

30

N

(Joins sheet 24)

(Joins sheet 29)

(Joins inset, sheet 24)

(Joins sheet 40)

(Joins inset, sheet 51)

PIKE COUNTY

FLINT RIVER

Flat Shoals

Pappys Creek

SOUTHERN

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 25)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

TROUP COUNTY

Odessadale

N

(Joins sheet 32)

(Joins sheet 36)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 32

32

(Joins sheet 26)

N

(Joins sheet 31)

(Joins sheet 33)

CZC3

(Joins sheet 37)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 33

(Joins sheet 27)

(Joins sheet 32)

(Joins sheet 34)

(Joins sheet 38)

33

N

GREENVILLE
(county seat)

GEORGIA

CENTRAL

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

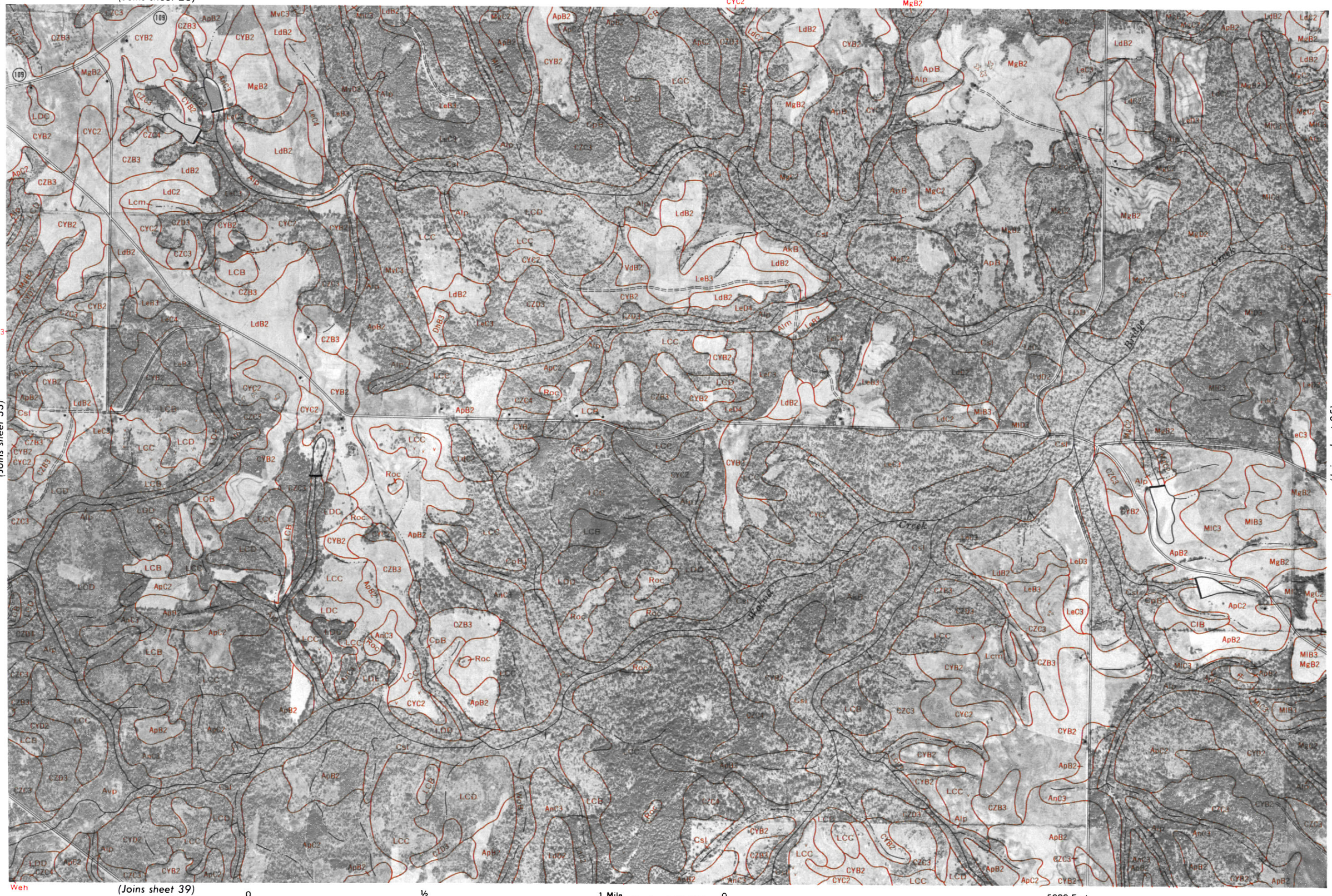
(Joins sheet 28)

N

(Joins sheet 33)

(Joins sheet 35)

(Joins sheet 39)



0 ½ 1 Mile

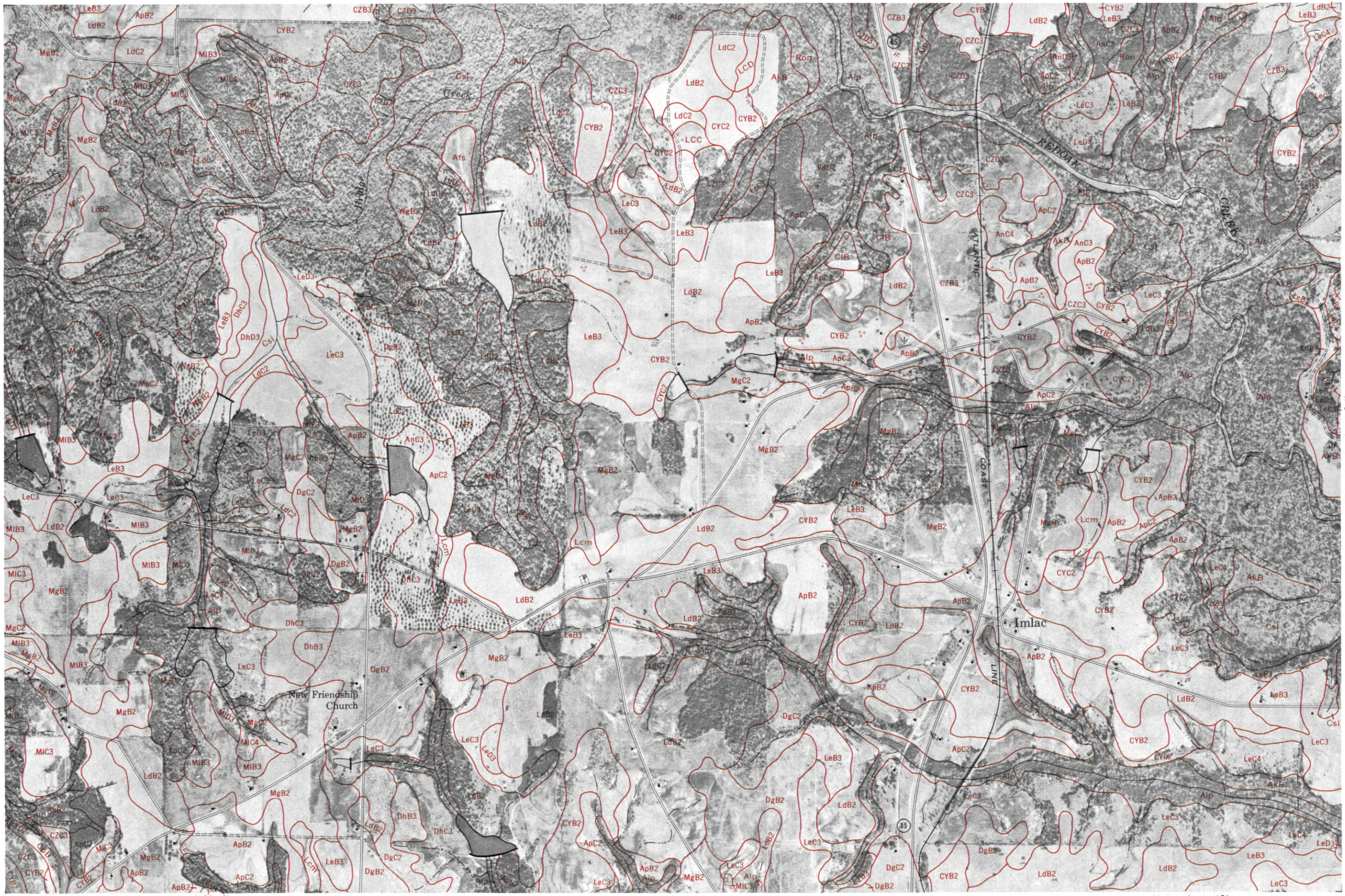
Scale 1:15 840

0 5000 Feet

(Joins sheet 29)

35

N



(Joins sheet 34)

(Joins inset, sheet 24)

(Joins sheet 40)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

(36)

(Joins sheet 31)

N

Odessadale

TROUP COUNTY

Flatshoal Creek

(Joins sheet 37)

(Joins sheet 41)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 37

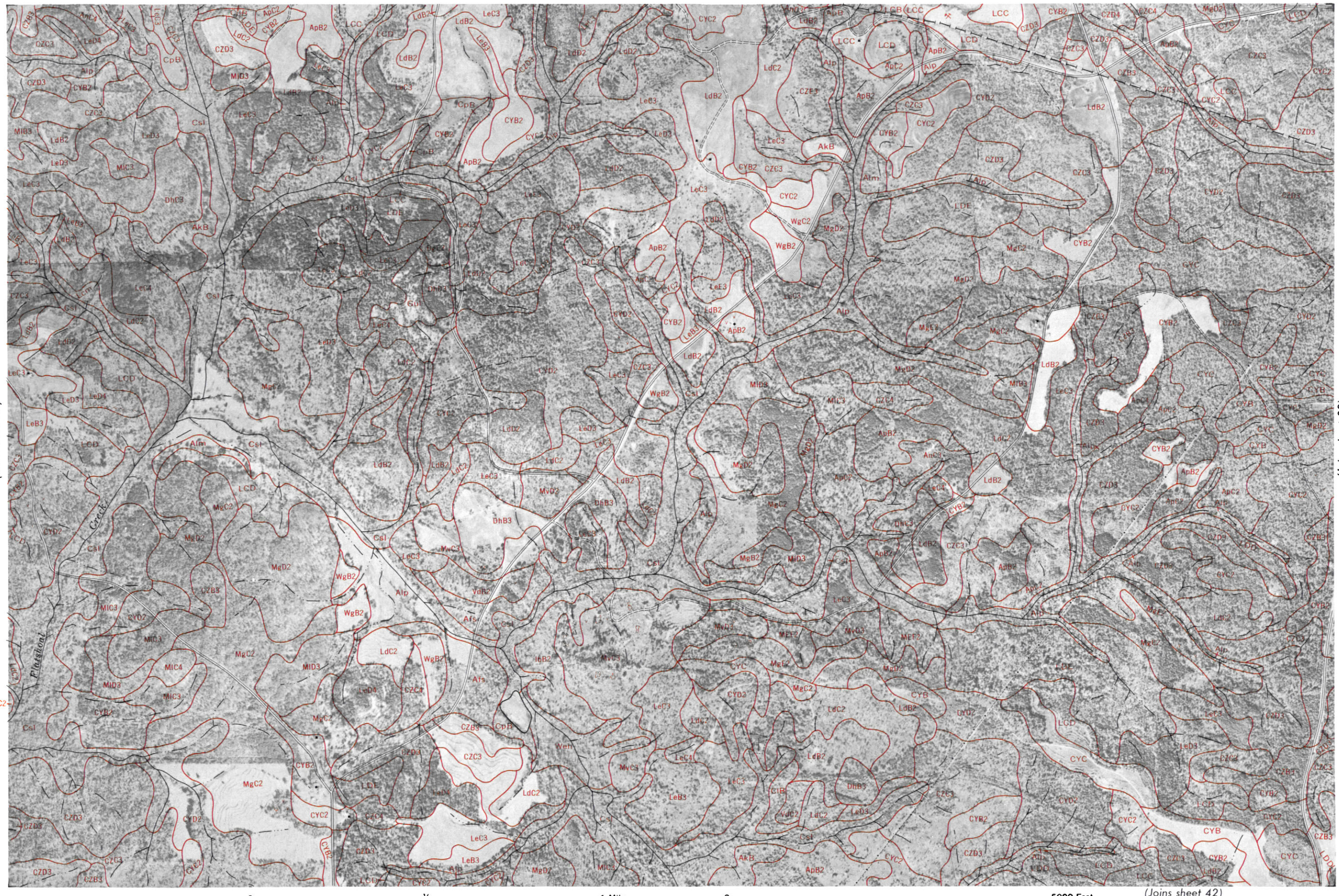
(Joins sheet 32)

37

N

(Joins sheet 36)

(Joins sheet 38)



(Joins sheet 42)

0 ½ 1 Mile

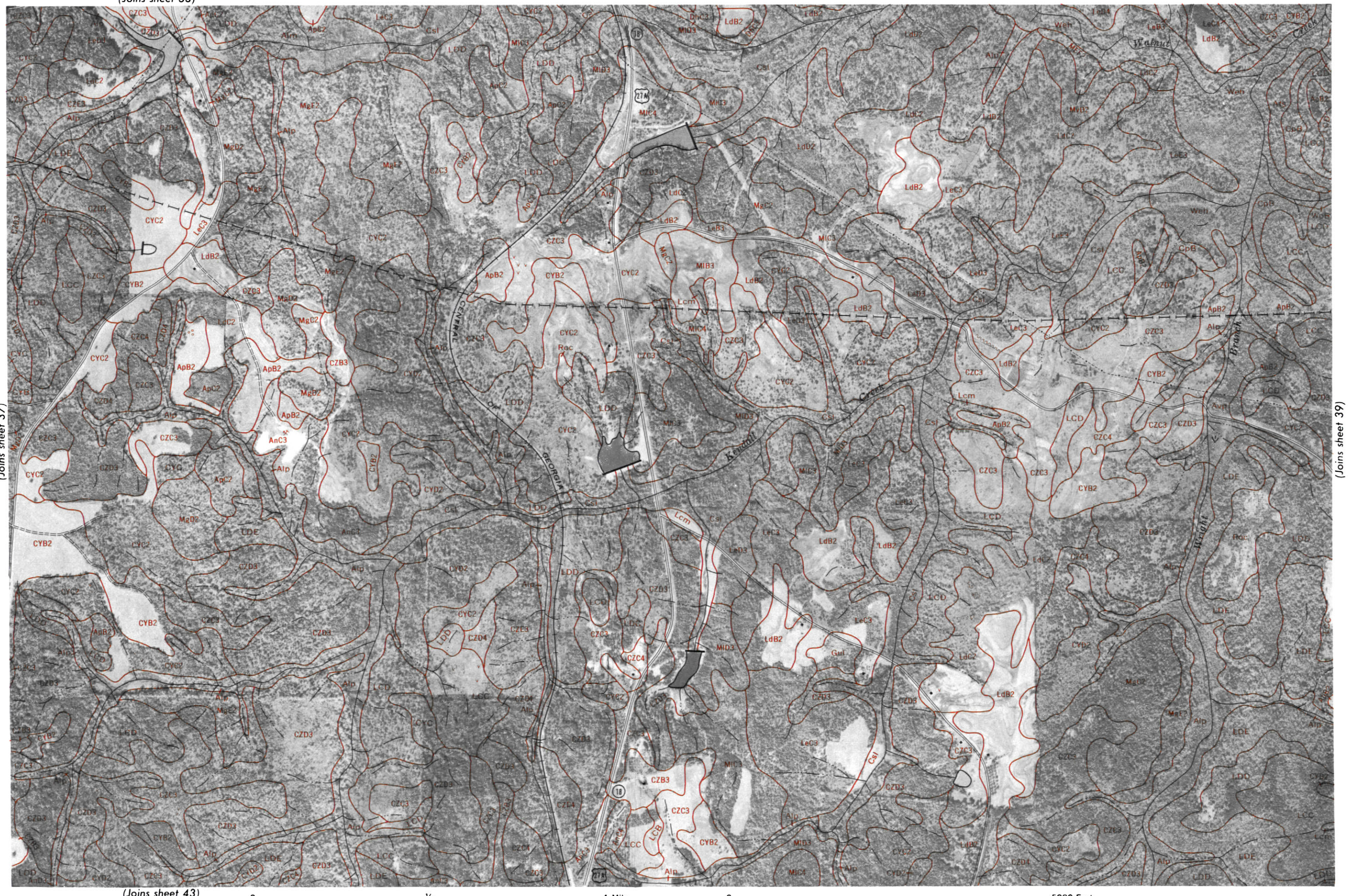
Scale 1:15 840

0 5000 Feet

38

N

(Joins sheet 33)



(Joins sheet 37)

(Joins sheet 39)

(Joins sheet 43)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 34)

N

(Joins sheet 38)

(Joins sheet 40)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia College of Agriculture, Agricultural Experiment Stations.

Andrews Crossroads

Cedar Rock Church

Cane Creek Church

McLendon Crossroads

Antioch Church

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 44)

40

N

(Joins sheet 35)

(Joins sheet 39)

(Joins inset, sheet 30)

WOODBURY

Pappys Creek

ATLANTIC COAST LINE

SOUTHERN

Alp (Joins sheet 45)

0 ½ 1 Mile

Scale 1:15 840

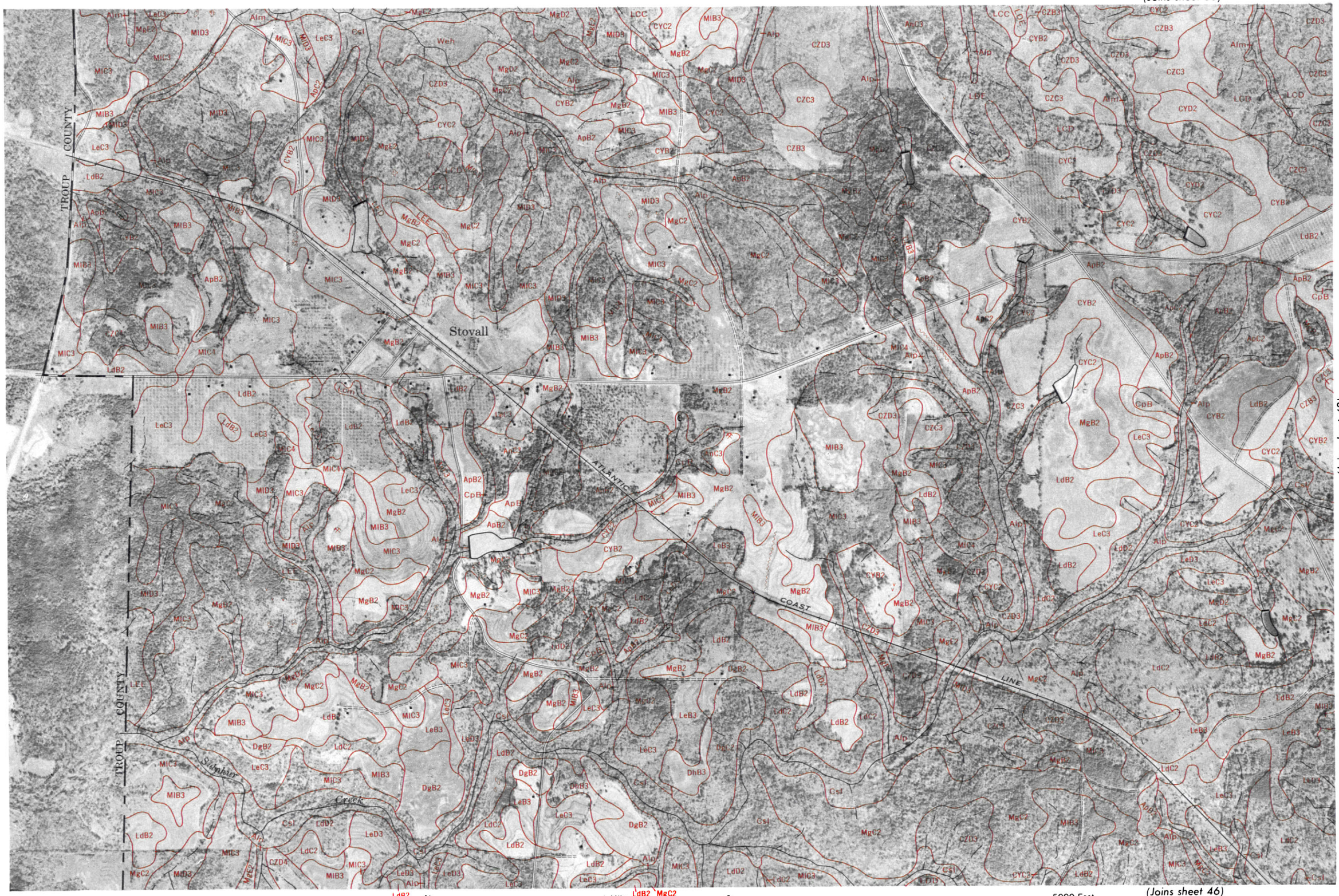
0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 41

(Joins sheet 36)

41

N



(Joins sheet 42)

(Joins sheet 46)

0 ½ 1 Mile

Scale 1:15 840

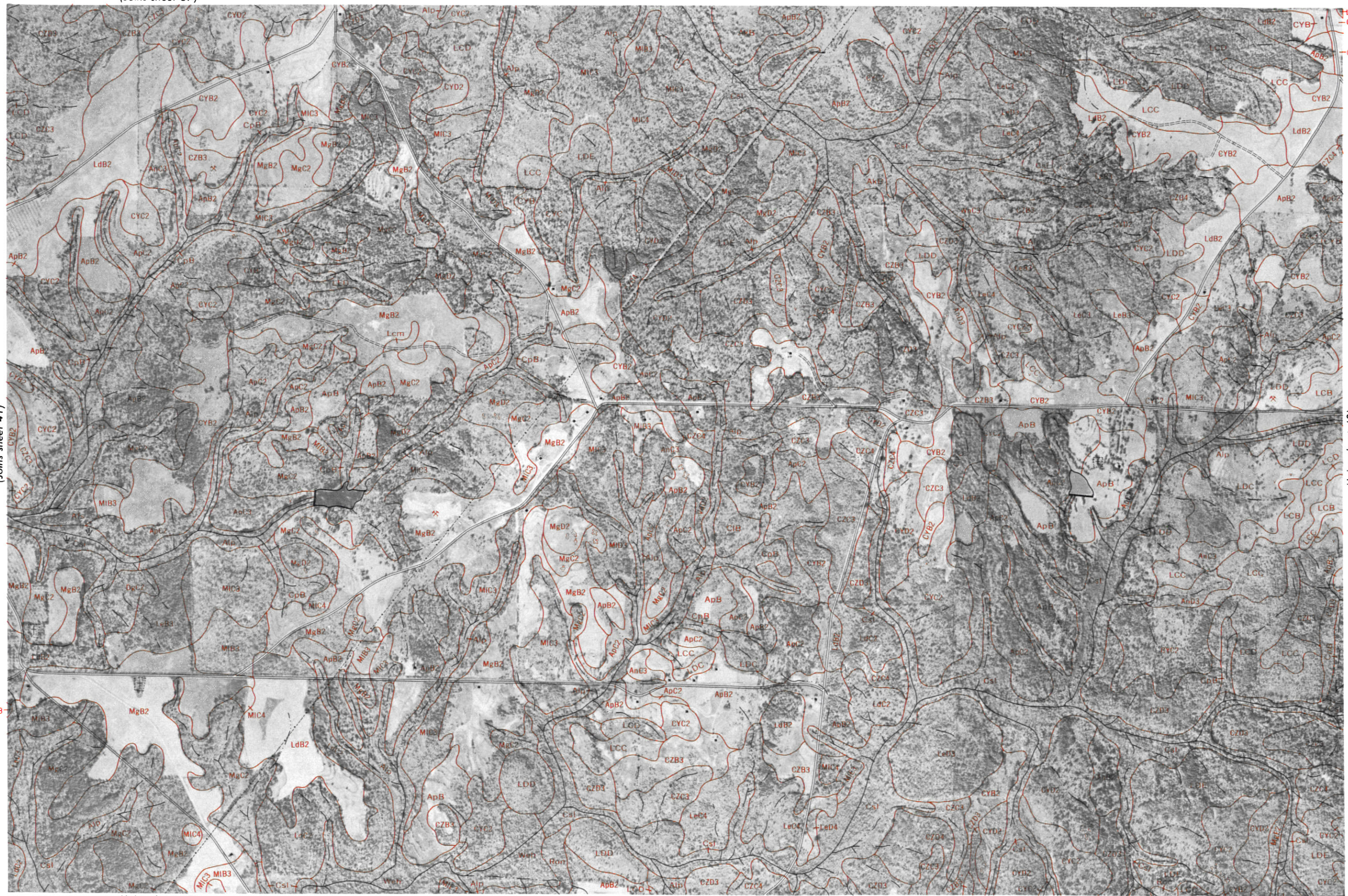
0 5000 Feet

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 42

(Joins sheet 37)

N



(Joins sheet 41)

(Joins sheet 43)

(Joins sheet 47)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 38)

N

(Joins sheet 42)

(Joins sheet 44)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

Harris

Jacks Creek

Jacks Creek

Hollis Branch

Hollis Branch

GEORGIA CENTRAL RR

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

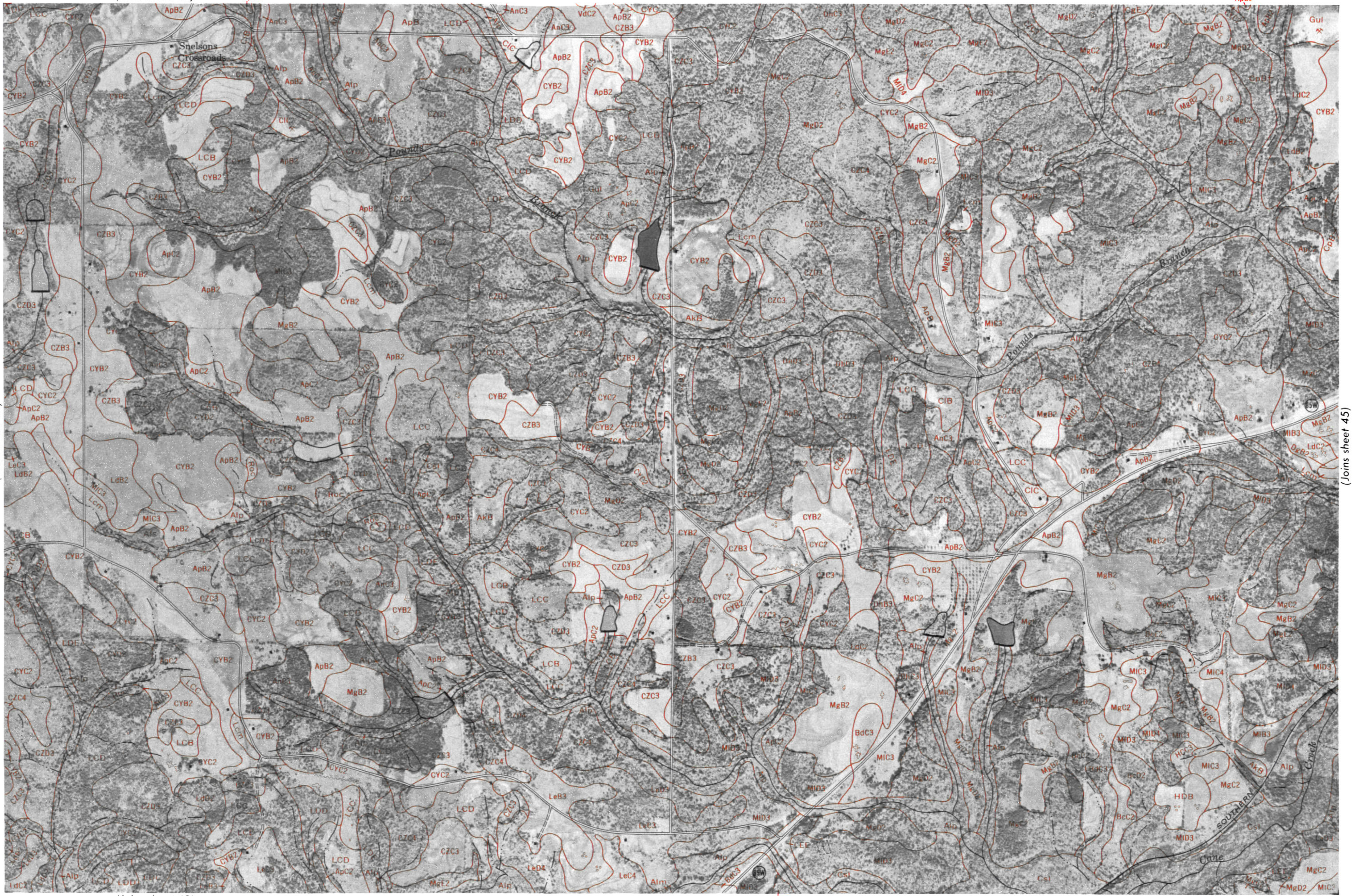
(Joins sheet 48)

(44)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 44

N

(Joins sheet 39)



(Joins sheet 43)

(Joins sheet 45)

(Joins sheet 49)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 45

(Joins sheet 40)

45

N

WOODBURY

SOUTHERN RAILWAY LINE

COASTAL ATLANTIC SOUTHERN RAILWAY

Formula Creek

Cane Creek

Turner Branch

Cane Creek

(Joins sheet 44)

(Joins inset, sheet 51)

(Joins sheet 50)

0 ½ 1 Mile

Scale 1:15 840

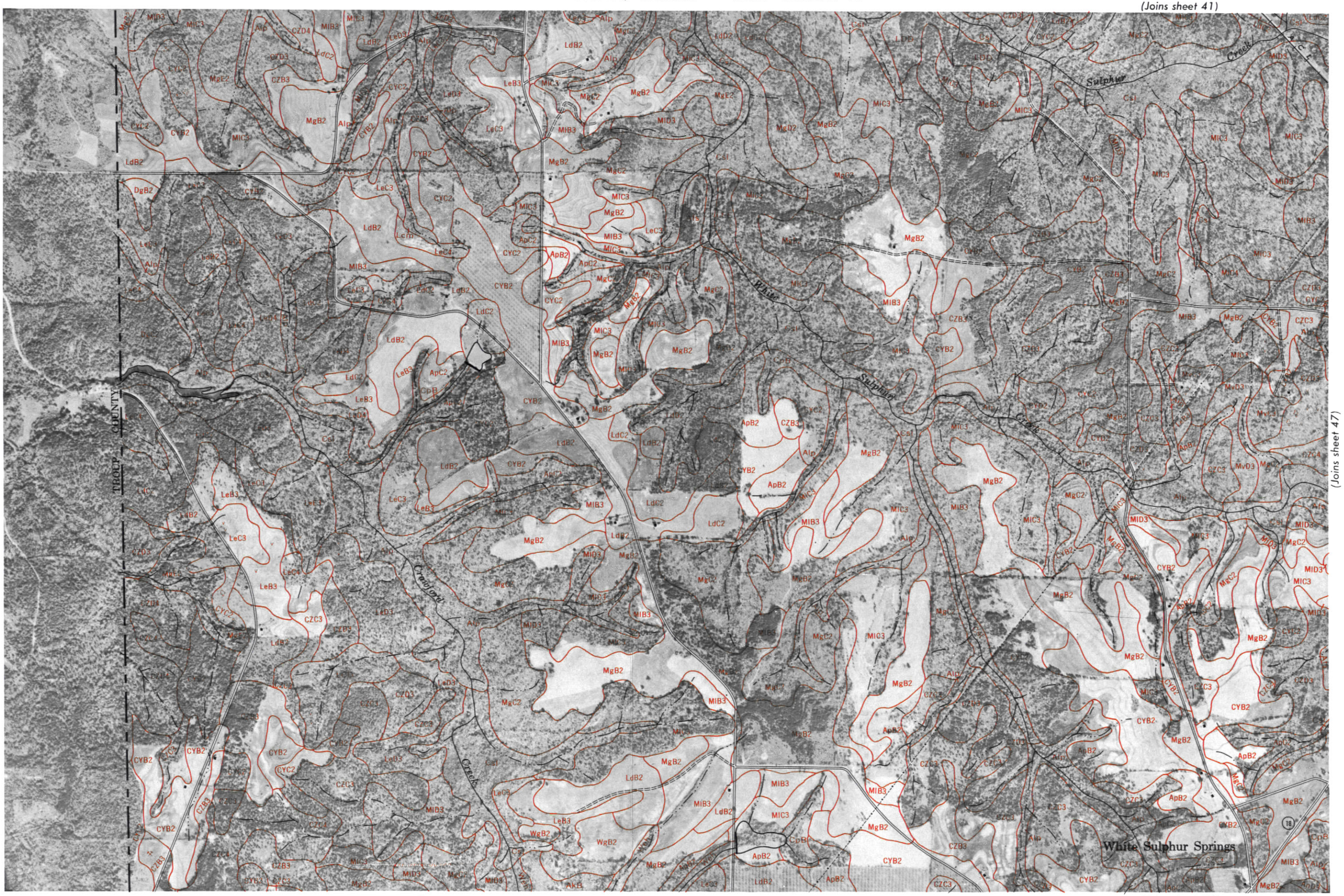
0 5000 Feet

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia College of Agriculture Experiment Stations.

(46)

N

(Joins sheet 41)



(Joins sheet 47)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 52)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 47

(Joins sheet 42)

47

N

(Joins sheet 46)

(Joins sheet 48)

This map is one of a set compiled in 1963 as part of a soil survey by the Soil Conservation Service, United States Department of Agriculture, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations.

Durand

ATLANTIC COAST LINE

GEORGIA OF CENTRAL

Sandhurst Creek

Sandhurst Creek

18

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 53)

48

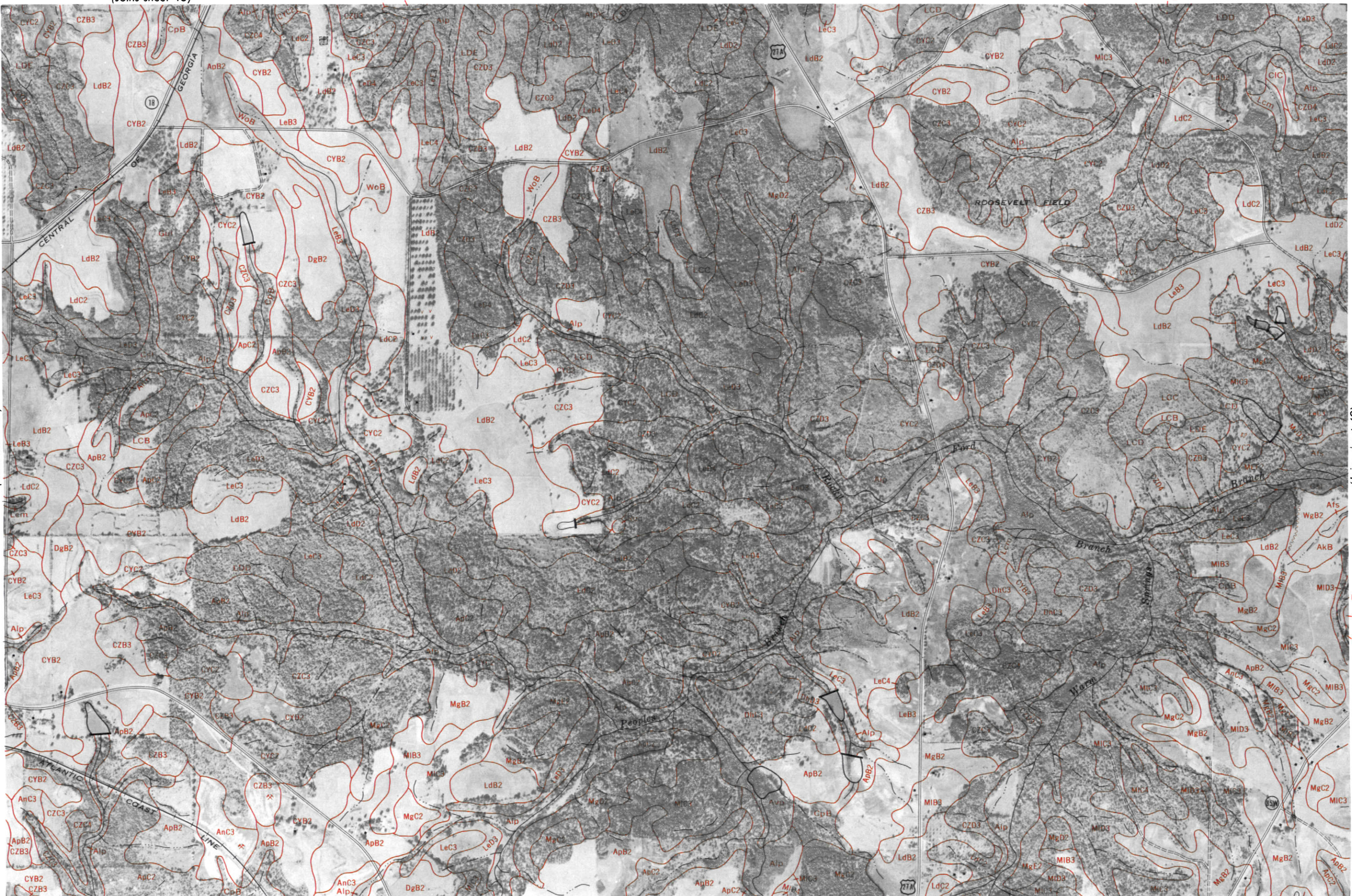
N

(Joins sheet 43)

(Joins sheet 47)

(Joins sheet 49)

(Joins sheet 54)



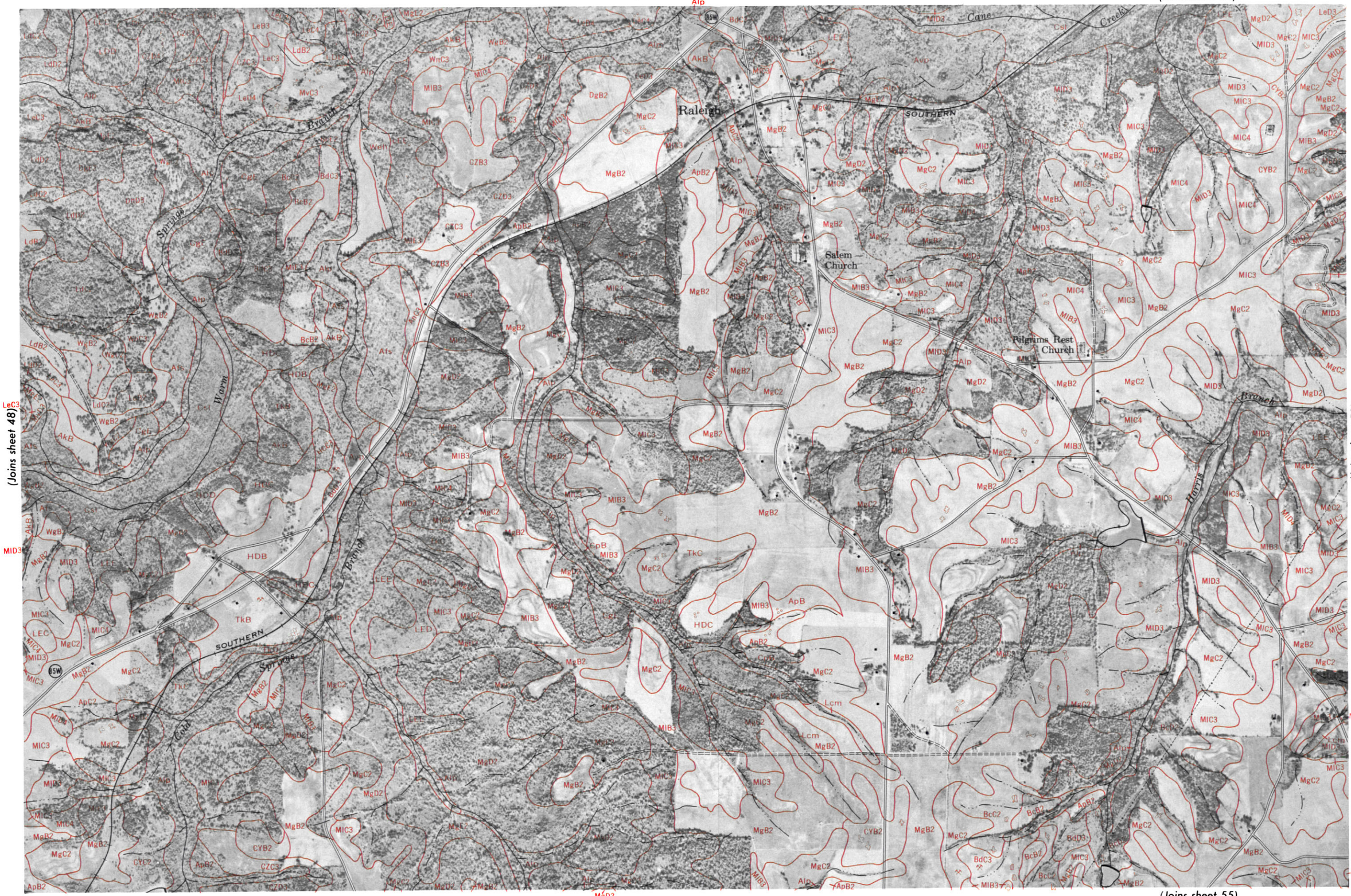
0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 44)

N



(Joins sheet 48)

(Joins sheet 50)

(Joins sheet 55)

0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

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50

(Joins sheet 45)

(Joins sheet 49)

(Joins sheet 51)

(Joins sheet 56)

N

Persico

FIRE TOWER

ATLANTIC COASTAL PLAIN

Back Creek

0 ½ 1 Mile

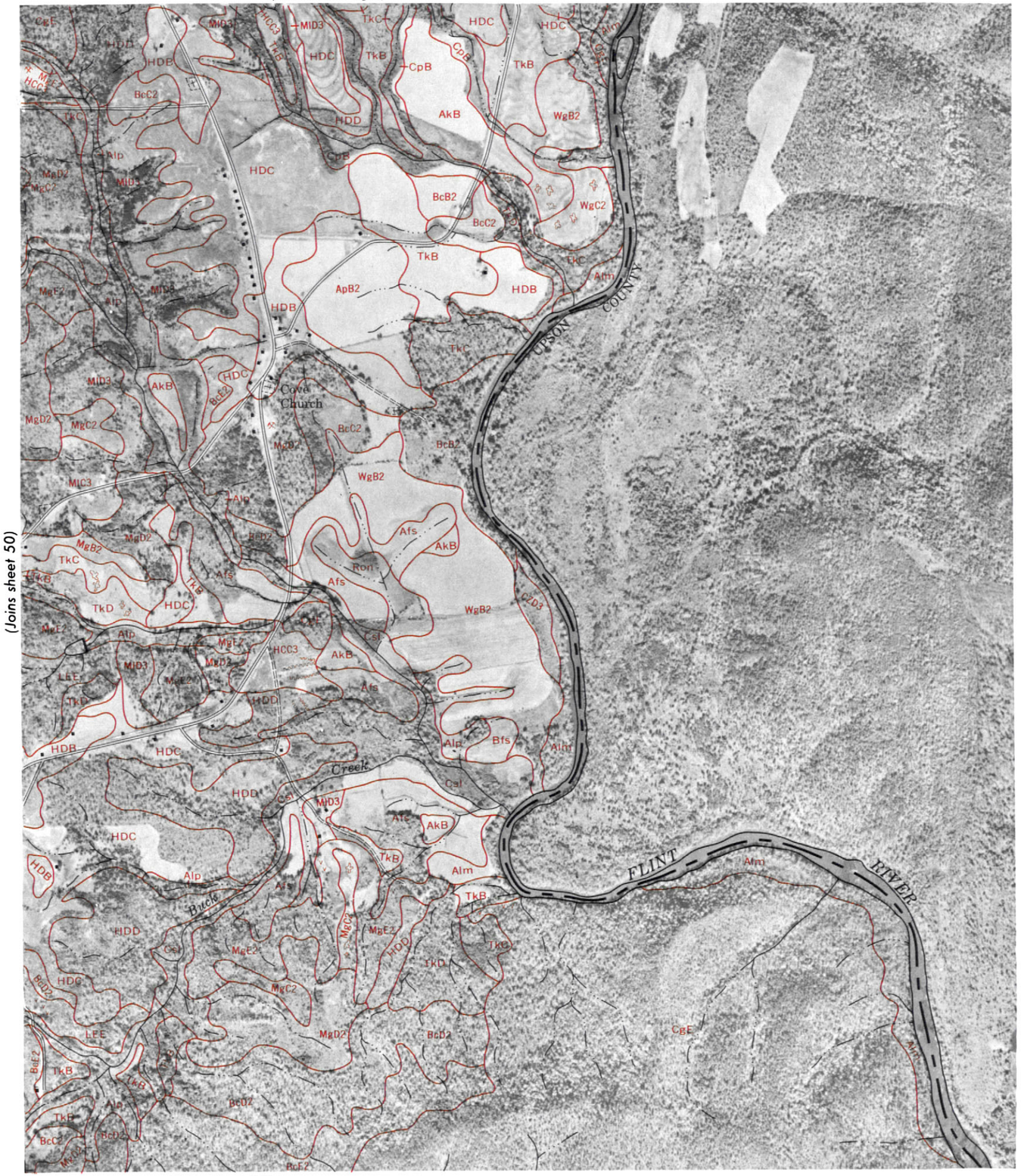
Scale 1:15 840

0 5000 Feet

(Joins lower right)

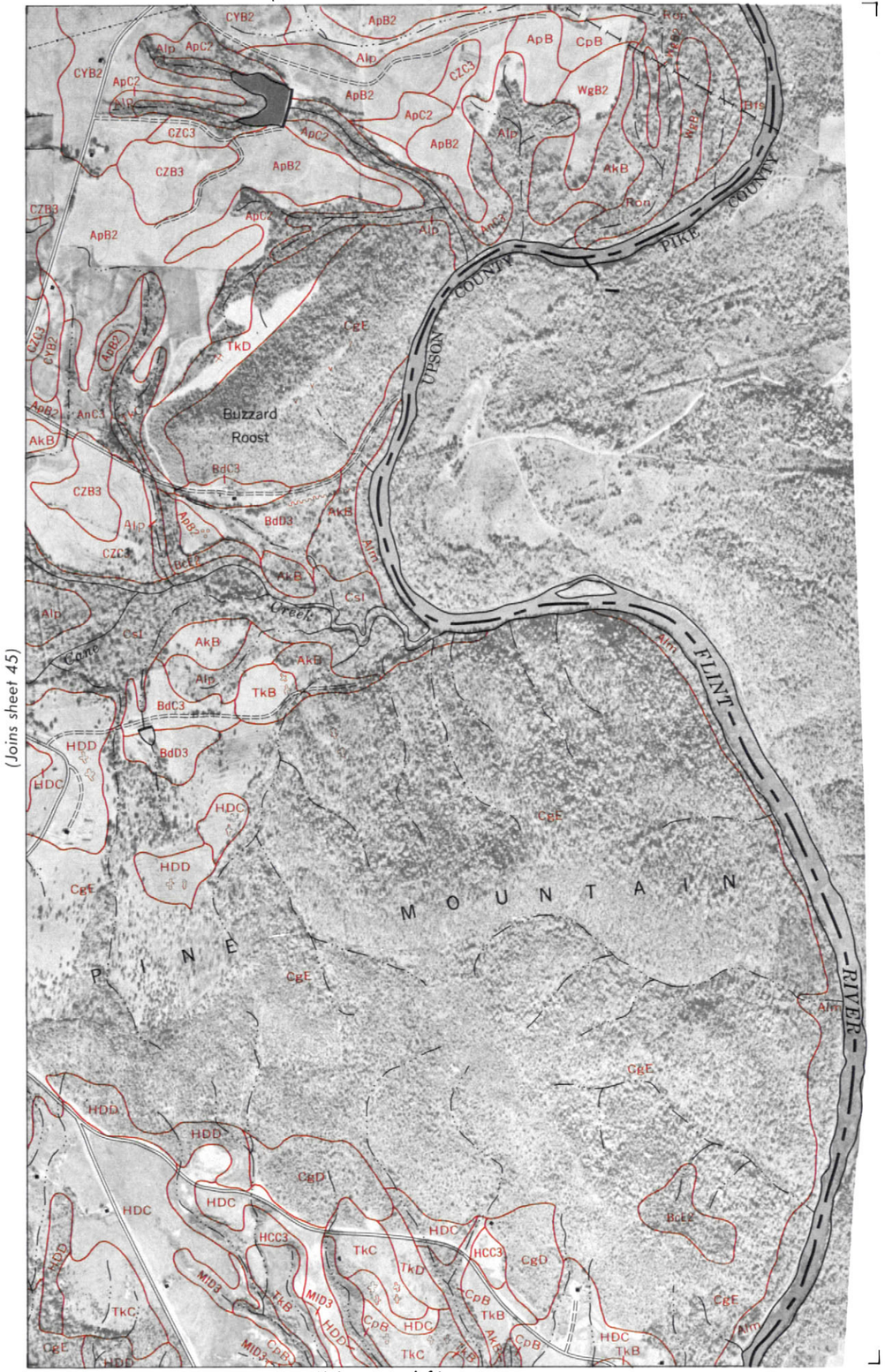
(Joins inset, sheet 30)

N



(Joins sheet 50)

(Joins sheet 57)



(Joins sheet 45)

(Joins upper left)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 46)

N

McGee's Pond

TROUP COUNTY

HARRIS COUNTY

HARRIS COUNTY

CENTRAL OF GEORGIA

LDE

Scale 1:15 840

0 ½ 1 Mile

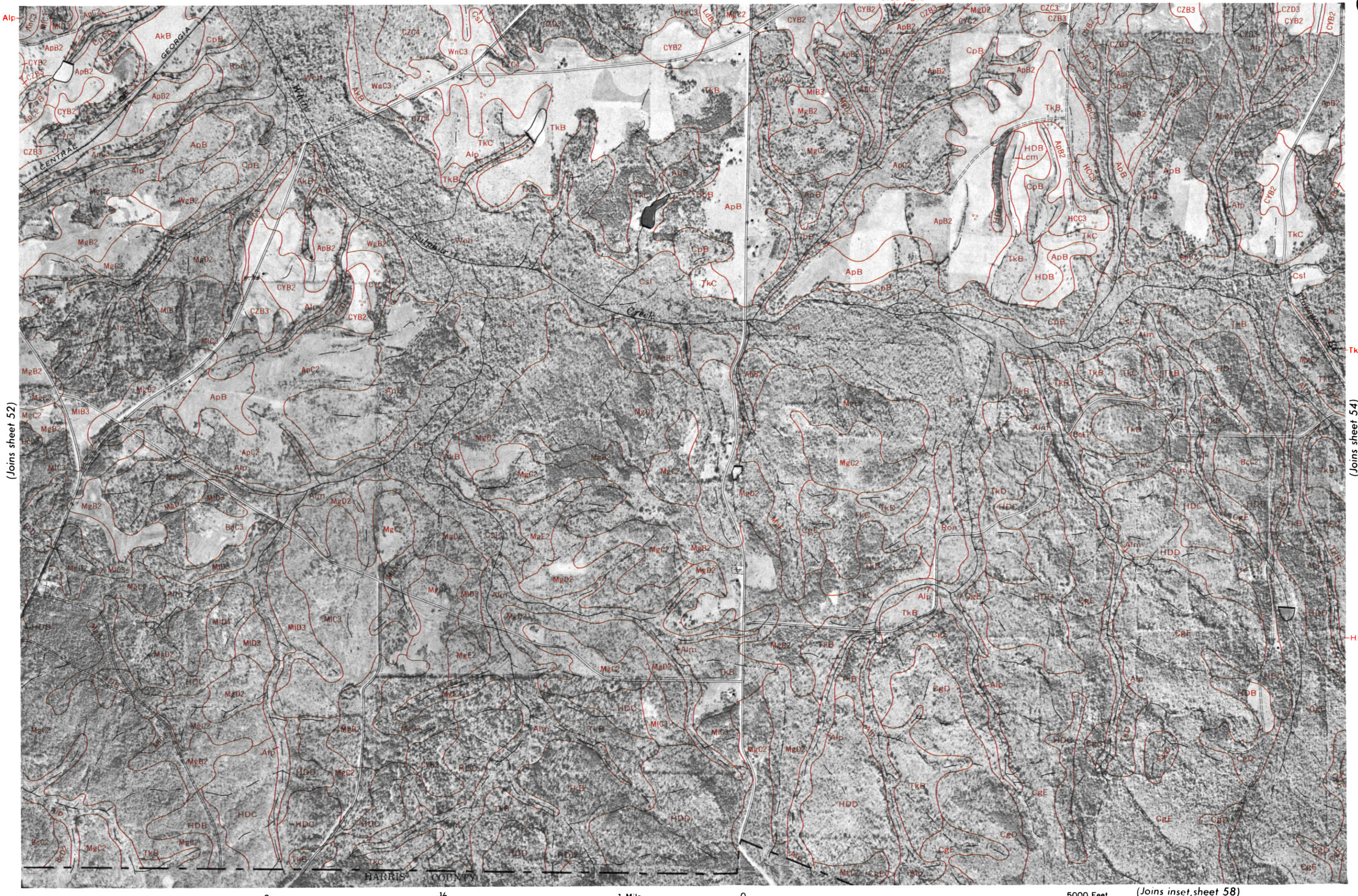
0 5000 Feet

(Joins sheet 53)

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 53

(Joins sheet 47)

53



(Joins sheet 52)

(Joins sheet 54)

(Joins inset, sheet 58)

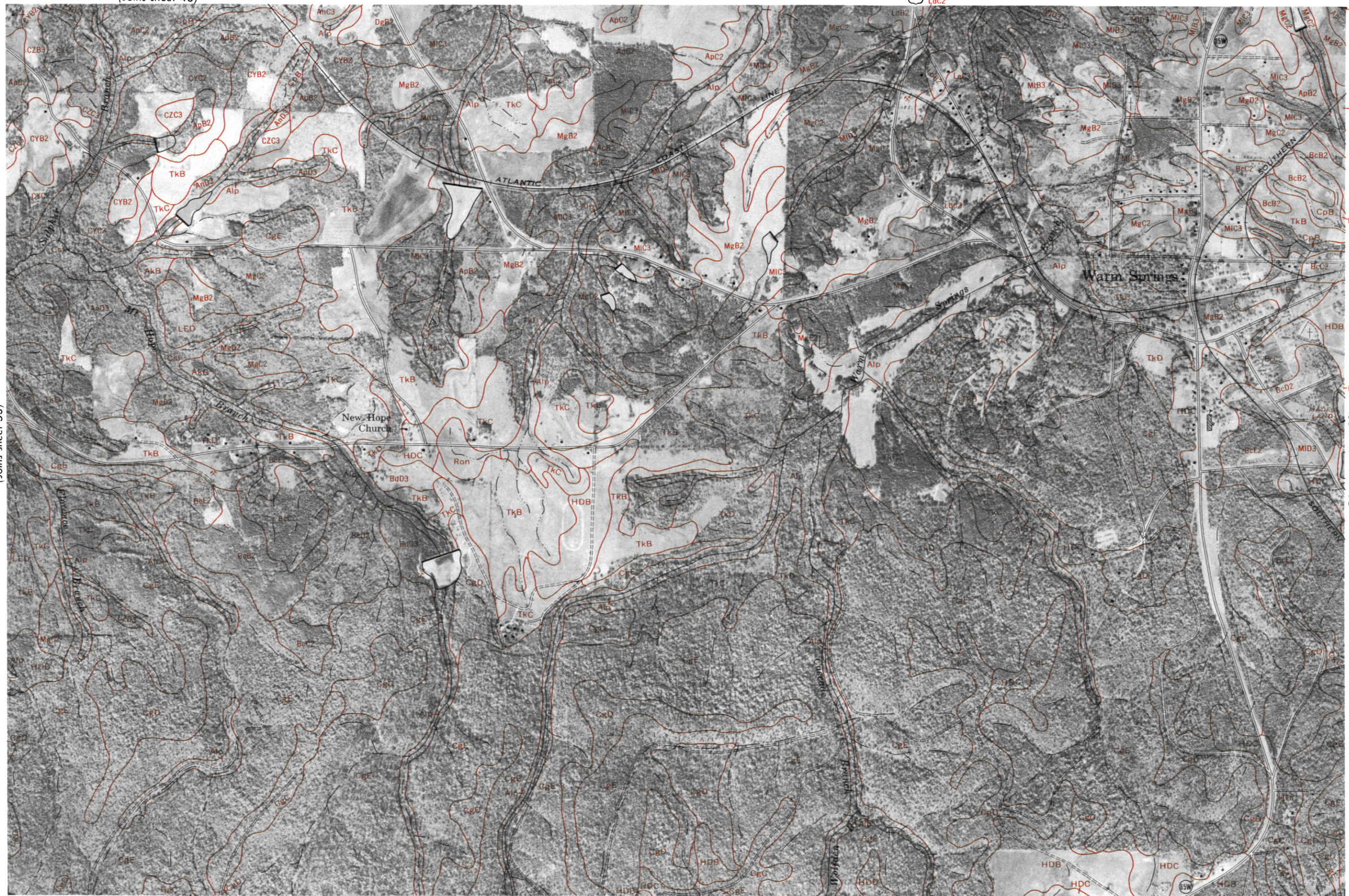
(Joins sheet 48)

N

(Joins sheet 53)

(Joins sheet 55)

(Joins sheet 58)



0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 55

(Joins sheet 49)

55

N

(Joins sheet 54)

(Joins sheet 56)

(Joins sheet 59)

Routons Crossroads

Bussey Crossroads

Bullock Crossroads

Hurricane

SOUTHERN RAILWAY

ATLANTIC COAST LINE

Cane Creek

Spring Branch

Hurricane Branch

Peacon Creek

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

(Joins sheet 50)

(Joins sheet 55)

(Joins sheet 57)

(Joins sheet 60)

N

Johnson Crossroad

Bethesda Church

Pigeon Creek

Hurricane Creek

ATLANTIC COAST LINE

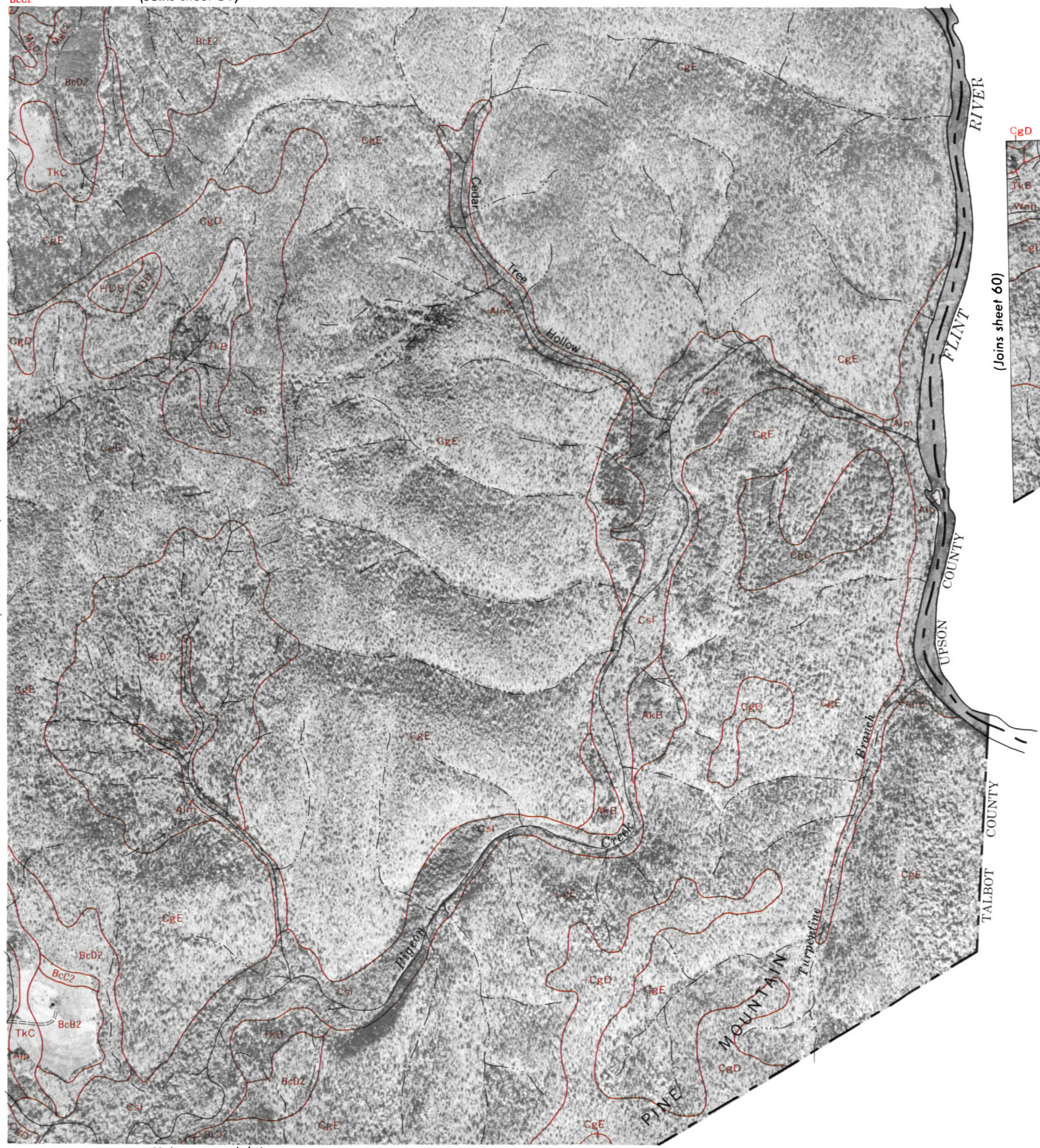
GULF, FLORIDA & ALABAMA

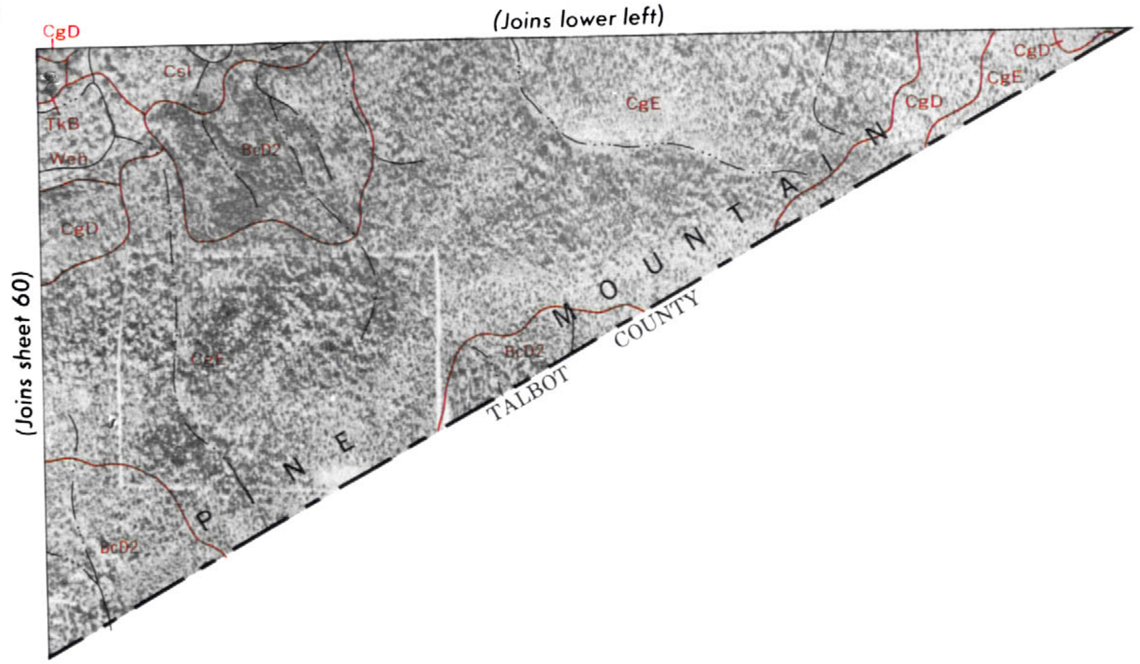
85

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet





N

0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

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MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 58

58

(Joins sheet 54)

N

(Joins lower right)

(Joins sheet 59)

(Joins sheet 53)

(Joins upper left)

HARRIS COUNTY

TALBOT COUNTY

HARRIS COUNTY

Nebula

SOUTHERN

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

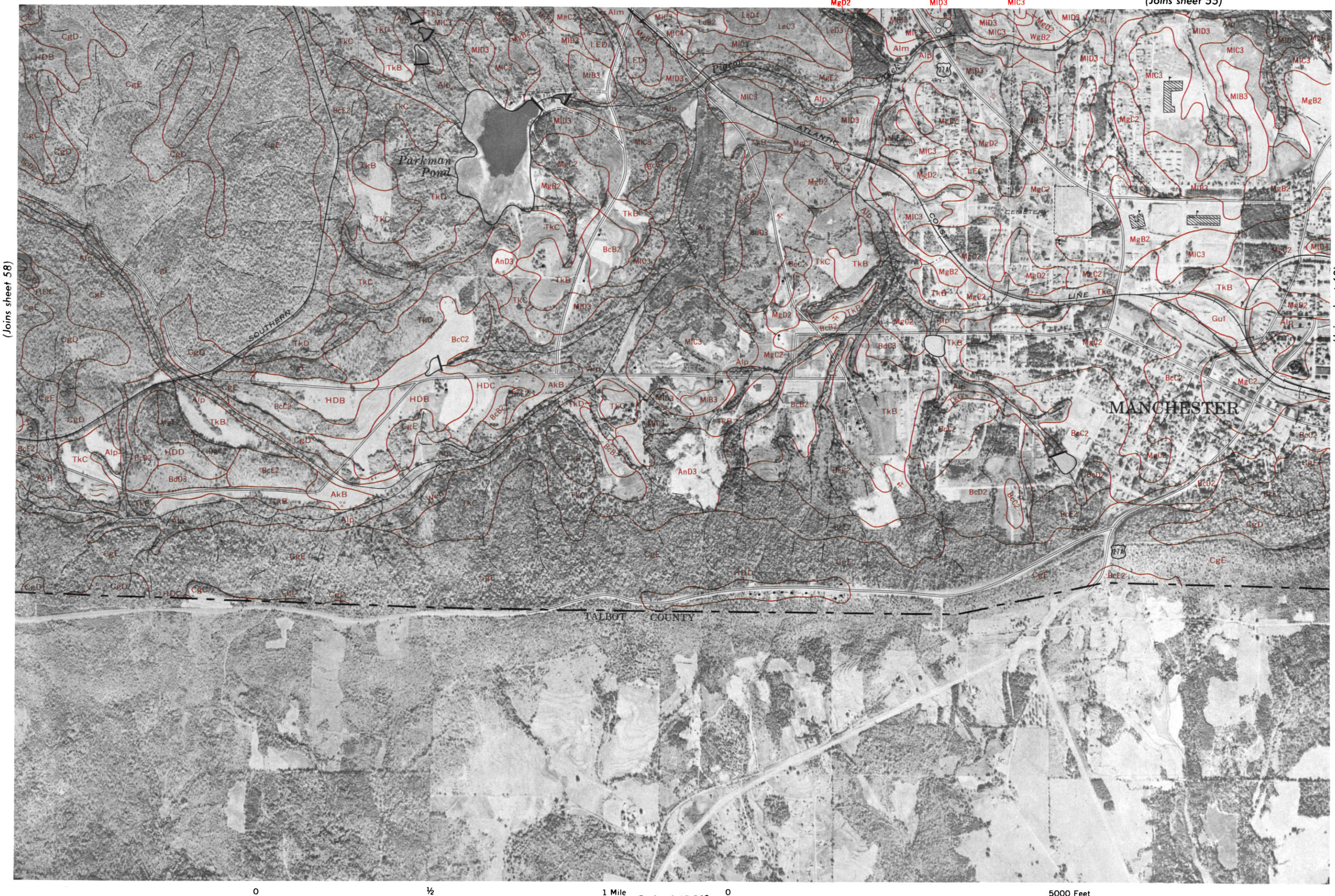
MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 59

(Joins sheet 55)

(Joins sheet 58)

(Joins sheet 60)

N



0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

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MERIWETHER COUNTY, GEORGIA — SHEET NUMBER 60

60

N

(Joins sheet 56)

(Joins sheet 59)

(Joins inset, sheet 57)

Chalybeate Springs

MANCHESTER

ATLANTIC COAST LINE

TALBOT COUNTY

Pigeon Creek

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet